

Threemile Restoration and Resiliency Project

Wildlife Report

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for:

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Table of Contents

Introduction	5
Resource Indicators and Measures.....	6
Effects Analysis.....	14
Spatial and Temporal Bounds	14
Regulatory Framework.....	14
Custer Forest Plan.....	14
Management Areas.....	16
Federal Law	17
National Forest Management Act.....	17
Endangered Species Act.....	18
Bald and Golden Eagle Protection Act	18
Migratory Birds, EO 12962 of January 10, 2001	18
Methodology.....	19
Information Sources.....	19
Affected Environment.....	19
Existing Condition	19
Desired Condition	19
Environmental Consequences	19
Northern Long-eared Bat.....	19
Regulatory Framework.....	19
Existing Condition	20
Affected Environment.....	21
Environmental Effects.....	21
Mitigation measures	22
Northern Goshawk.....	22
Regulatory Framework.....	22
Existing Condition	22
Methodology.....	24
Affected Environment.....	25
Environmental Effects.....	26
Conclusion.....	27
Big Game	27

Regulatory Framework.....	27
Existing Condition	27
Methodology.....	28
Affected Environment.....	30
Environmental Effects.....	32
Conclusion.....	34
Bats	34
Regulatory Framework.....	34
Existing Condition	34
Affected Environment.....	34
Environmental Effects.....	34
Migratory Birds	35
Regulatory Framework.....	35
Existing Condition	36
Affected Environment.....	36
Conclusion.....	37

Introduction

The purpose of this report is to provide an analysis of anticipated effects of the Threemile Restoration and Resiliency Project on wildlife resources. It also serves as the Biological Evaluation for the project, as required in Forest Service Manual 2672.4 (USDA Forest Service 2002), which states that a review will be conducted for all Forest Service (FS) planned activities for possible effects on endangered, threatened, proposed, or sensitive species.

The Threemile Project aims to create a mosaic across the project area to improve ecosystem resiliency through commercial timber harvest, non-commercial timber treatments and prescribed burning. These treatments will restore a heterogeneous ponderosa pine landscape that is resilient to natural disturbances, reduce fuel loads to enhance fire suppression, support the Powder River Wildfire Protection Plan, provide wood products to local communities, and maintain and improve diversity and quality of habitat for selected Forest Plan species.

Three alternatives were considered in this report including one No-Action and two action alternatives. The amount of area affected by commercial harvest, non-commercial harvest, prescribed burning, and temporary roads in both action alternatives varies. The table below provides a summary of both action alternatives. Additionally, both alternatives will decommission National Forest System Road 4703 from the junction of 4362 north to the Forest Service/ private land boundary.

Table 1. Acres for each treatment for Alternatives A and B.

Treatment	Alternative A	Alternative B
Commercial Harvest and no Prescribed Burns	1833	1910
Commercial Harvest Areas and Prescribed Burns	1179	1249
Artificial Regeneration	253	253
Broadcast Burning for Non-Forest Restoration	1971	1508
Broadcast Burning	2820	2497

The Threemile Project was designed, in part to benefit wildlife resources. Specifically, this project includes the need to manage to maintain or improve long-term diversity and quality of habitat for Management Indicator Species (MIS) and selected species as identified in the Forest Plan including white-tailed deer, mule deer and grouse. This will be accomplished by providing habitat diversity, including habitats associated with standing snags, down wood, non-forested grasslands, shrublands, and deciduous woodlands and meet key habitat characteristics for goshawk, white-tailed deer, western kingbird, and big game.

Internal and public scoping identified concern regarding impacts to wildlife resources as a main issue. Potential impacts can be summarized into two primary issues: 1.) Effects to wildlife species (i.e. disturbance and displacement), and 2.) Changes to wildlife habitat availability and distribution (i.e. fragmentation, modification, reduced connectivity, and availability of security habitat). Effects for both issues are discussed within species specific sections.

Resource Indicators and Measures

Project alternatives are evaluated by anticipated impacts to management indicator species (MIS) and other species of key interest (i.e. federally threatened and endangered species, regionally sensitive species, selected game species, and state sensitive species) as mandated by the Forest Plan. The list of regionally sensitive species for the Custer Gallatin National Forest was verified through the U.S. Forest Service (USFS) website on 31 January, 2018 (USFS 2011). The list of Federally Threatened and Endangered species for Powder River County, Montana, which encompasses the Threemile Project area was verified through the U.S. Fish and Wildlife Service (USFWS) website on 2 February, 2018 (USFWS 2018). The following threatened, endangered, sensitive, management indicator species and major interest species and/or their habitats are analyzed in detail in this report:

- Northern long-eared bat.
- Northern goshawk.
- Big game (includes elk, white-tailed deer, and mule deer discussion).
- Bats (includes long-eared myotis, long-legged myotis, and Townsend's big-eared bat discussion).
- Migratory birds (includes loggerhead shrike, golden eagle, merlin, Bullock's oriole, yellow warbler, ovenbird, spotted towhee, and sharp-tailed grouse).

A comprehensive list of threatened, endangered, regionally sensitive, management indicator species and major interest species considered by this project are summarized in Table 2. Many of the species were analyzed in this report however species, or their habitats, that do not occur in the project area or surrounding were not evaluated in detail. Habitat descriptions are based on current information located in the Montana Natural Heritage Program, Montana Field Guide (Montana Field Guide 2015).

Table 2 Threatened species considered in Threemile analysis that occur in Powder River County, Montana

Common Name		Present in Project Area	Habitat in Project Area		Determination of Effects ¹		
Scientific Name	General Habitat Requirements			Description of Effects on Habitat or Species	No Action	Alt A	Alt B
Threatened, Endangered and Proposed Species							
Northern Long-Eared Bat	Forest dependent, with availability of snags for summer roosting and deeper recesses for winter hibernacula.	N	Y	See Northern Long-Eared Bat analysis	NE	NLAA	NLAA
<i>Myotis septentrionalis</i>							

¹ The determination of effects for federally listed species (threatened or endangered) is limited to: (1.) NE - No effect; (2) NLAA - May effect - Not likely to adversely affect; (3) * LAA - May effect - Likely to adversely affect; and (4) BE - Beneficial effect. * = Considered a trigger for a significant action. Options in determination of effects for proposed federally listed species are: (1.) No effect; (2.) Not likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat; (3.) Likely to jeopardize the continued existence of the species or result in destruction or adverse modification of proposed critical habitat. The determination is based on the presence of suitable habitat.

Table 3 Forest service sensitive species considered for analysis in the Threemile project

Common Name		Present in Project Area	Habitat in Project Area		Determination of Effects ²		
Scientific Name	General Habitat Requirements			Description of Effects on Habitat or Species	No Action	Alt A	Alt B
Forest Service Sensitive Species							
American Peregrine Falcon <i>Falco peregrinus anatum</i>	Cliff habitat over 200' high with suitable ledges for nest construction	N	N	None	NI	NI	NI
Bald Eagle				Not analyzed in detail; little nesting habitat and few observations in nesting season and no known nests in Threemile area. District is utilized by transient individuals and as winter habitat.	NI	MIIH	MIIH
<i>Haliaeetus leucocephalus</i>	Riparian habitats, forested areas along major water bodies. May use uplands	Y	Y		NI	MIIH	MIIH
Black-backed Woodpecker <i>Picoides arcticus</i>	Predominately burned areas of pine	Y	Y	Analyzed in Migratory Birds section	NI	MIIH	MIIH
Blue-gray Gnatcatcher <i>Poliopitila caerulea</i>	Open stands of juniper and limber pine with intermixed sagebrush.	N	N	None. Outside of range.	NI	NI	NI
Burrowing Owl				Low potential to impact species as prairie dog colonies will not be treated foraging and secondary nesting habitat may be temporarily altered from burning.	NI	MIIH	MIIH
<i>Athene cunicularia</i>	Open grasslands, nesting and roosting in burrows on prairie dog colonies	N	Y		NI	MIIH	MIIH
Greater Sage-Grouse				No leks are found in the project area, nearby leks are inactive. Few impacts to habitat no observations since 2006, not expected to occur.	NI	NI	NI
<i>Centrocercus urophasianus</i>	Sagebrush with intermixed grasslands	N	Y		NI	NI	NI
Harlequin Duck <i>Histrionicus histrionicus</i>	Mountain streams	N	N	None	NI	NI	NI
Long Billed Curlew				Minimal and short term impacts to grasslands. Rare occurrences in project area. Analyzed in Migratory Birds Section	NI	MIIH	MIIH
<i>Numenius americanus</i>	Mixed grass prairie and moist meadows	Y	Y		NI	MIIH	MIIH
Black-tailed Prairie Dog				Prescribed burning is not expected to negatively affect grasslands, impacts would be short term	NI	MIIH	MIIH
<i>Cynomys ludovicianus</i>	Flat open grasslands with low vegetation	Y	Y		NI	MIIH	MIIH
Bighorn Sheep <i>Ovis canadensis</i>	Cliffs, mountains, rolling foothills	Y	N	Occurrences have been rare and are likely dispersing animals. Not observed since 2001, not expected to occur.	NI	NI	NI

² Options in determination of effects: (1) NI - No impact; (2) MIIH - May impact individuals, but is not likely to cause a trend to Federal listing or loss of viability; (3) WIFV – will impact individuals and habitat with a consequence that the action may contribute to federal listing or cause a loss of viability to the population of species; and (4) BI - Beneficial impact. There would be "no impact" to sensitive species determined to be absent from the project area and not included in this table. The determination is based on the presence of suitable habitat.

Gray Wolf				Occurrences have been rare and are likely dispersing animals. Not observed since 2011 with only 3 observations recorded near the district ever.			
<i>Canis lupus</i>	Remote mountainous areas, various habitats	N	Y		NI	NI	NI
North American Wolverine							
<i>Gulo gulo luscus</i>	Remote mountainous areas	N	N	None	NI	NI	NI
Pallid Bat	Arid deserts and grasslands with rock outcrops	Y	Y	Analyzed in Bats section.	NI	MIIH	MIIH
Spotted Bat							
<i>Euderma maculatum</i>	Desert to montane coniferous forests	N	N	None	NI	NI	NI
Townsend's Big-eared Bat							
<i>Corynorhinus towsendii</i>	Cave and cave-like structures, forests	Y	Y	Analyzed in Bats section.	NI	MIIH	MIIH
White-tailed Prairie Dog							
<i>Cynomys leucurus</i>	Flat open grasslands with low vegetation	N	N	None	NI	NI	NI
Great Plains Toad							
<i>Bufo cognatus</i>	Sage-brush grasslands, small reservoirs	Y	Y	See Fisheries analysis	NI	MIIH	MIIH
Northern Leopard Frog							
<i>Rana pipiens</i>	Ponds, reservoirs, marshes, and streams	Y	Y	See Fisheries analysis	NI	MIIH	MIIH
Plains Spadefoot							
<i>Spea bombifrons</i>	Soft sandy soils near bodies of water	Y	Y	See Fisheries analysis	NI	MIIH	MIIH
Western Toad							
<i>Bufo boreas</i>	Wetlands, grasslands and forests	N	N	See Fisheries analysis	NI	MIIH	MIIH
Greater Short-horned Lizard				Minimal and short impacts to grassland cover and available forage from prescribed burning	NI	MIIH	MIIH
<i>Phrynosoma hernandesi</i>	Sage-brush and short grass prairie	N	Y		NI	MIIH	MIIH
Milk Snake				Minimal impacts to grasslands from prescribed burning. Changes in cover and food source may occur in the short term	NI	MIIH	MIIH
<i>Lampropeltis triangulum</i>	Grasslands, burrows, rock outcropping and riparian areas	Y	Y		NI	MIIH	MIIH
Western Hognose Snake				Minimal impacts to grasslands from prescribed burning. Changes in cover and food source may occur in the short term	NI	MIIH	MIIH
<i>Heterodon nasicus</i>	Sagebrush grassland, areas with sandy soil	Y	Y		NI	MIIH	MIIH

Table 4 Habitat Indicator and Key Species of Interest considered for analysis in the Threemile project

Common Name	General Habitat Requirements	Present in Project Area	Habitat in Project Area	Description of Effects on Habitat or Species	Determination of Effects ³		
					No Action	Alt A	Alt B
Habitat Indicator and Key Species of Interest							
Northern Goshawk <i>Accipiter gentilis</i>	Indicator for old growth, found in varying forest stands, large wooded tracts	Y	Y	See Northern Goshawk analysis	0	0	0
White-tailed Deer <i>Odocoileus virginianus</i>	Indicator for dog hair ponderosa pine, found in woody draws and riparian	Y	Y	See Big Game analysis	0	0	0
Ruffed Grouse <i>Bonasa umbellus</i>	Indicator for aspen	N	N	None	0	0	0
Western Kingbird <i>Tyrannus verticalis</i>	Indicator for open forest savanna	Y	Y	Treatment of ponderosa pine may improve habitat	0	+	+
Baltimore Oriole <i>Icterus galbula</i>	Indicator for riparian trees	Y	N	See Migratory Bird analysis	0	0	0
Yellow Warbler <i>Setophaga petechia</i>	Indicator for riparian shrub	Y	Y	See Migratory Bird analysis	0	0	0
Ovenbird <i>Serurus aurocapillus</i>	Indicator for hardwood draw trees	Y	Y	See Migratory Bird analysis	0	0	0
Spotted Towhee <i>Pipilo maculatus</i>	Indicator for hardwood draw shrubs	Y	Y	See Migratory Bird analysis	0	0	0
Brewer's Sparrow <i>Spizella breweri</i>	Indicator for sagebrush	Y	Y	See Migratory Bird analysis	0	0	0
Elk <i>Cercus canadensis</i>	Protected wooded areas with openings	Y	Y	See Big Game analysis	0	0	0
Sharptail Grouse <i>Typanuchus phasianellus</i>	Indicator for prairie grasslands	Y	Y	See Migratory Bird analysis	0	+	+
Merlin <i>Falco columbarius</i>	Sparse conifer stands adjacent to prairie	Y	Y	See Migratory Bird analysis	0	+	+
Prairie Falcon <i>Falco mexicanus</i>	Cliffs for nesting and grasslands for hunting	N	N	Cliff habitat not available in project area or nearby, not analyzed in detail	0	0	0

³ Options in determination of effects: (1) + = positive impact; (2) 0 = neutral or no impact; and (3) - = negative impact.

Mule Deer	Ponderosa pine forest, juniper stands,						
<i>Odocoileus hemionus</i>	sage brush and grasslands	Y	Y	See Big Game analysis	0	+	+
Pronghorn Antelope							
<i>Antilocapra americana</i>	Grasslands and sagebrush	Y	Y	See Big Game analysis	0	+	+
Greater Prairie Chicken							
<i>Tympanuchus cupido</i>	Grasslands	N	N	None	0	0	0

Table 5 Migratory birds that were considered for analysis in the Threemile project

Common Name		Present in Project Area ⁴	Habitat in Project Area		Determination of Effects ⁴		
					Description of Effects on Habitat or Species	No Action	Alt A
Scientific Name	General Habitat Requirements						
Migratory Birds and Birds of Conservation Concern							
Black-billed Cuckoo <i>Coccyzus erythrophthalmus</i>	Wooded draws, forest edges and thickets	N	Y	Does not occur on Ashland Ranger District	0	0	0
Brown Creeper <i>Certhia americana</i>	Mature and old growth stands with high canopy cover, snags	P	Y	See Migratory Bird analysis	0	-	-
Cassin's Finch <i>Haemorhous cassinii</i>	Ponderosa pine, post-fire forests	Y	Y	See Migratory Bird analysis	0	-	-
Chestnut-collared Longspur <i>Calcarius ornatus</i>	Short to medium grasses, grazed areas	P	Y	See Migratory Bird analysis	0	+	+
Clark's Nutcracker <i>Nucifraga columbiana</i>	Ponderosa pine stands	P	Y	See Migratory Bird analysis	0	-	-
Ferruginous Hawk <i>Buteo regalis</i>	Mixed grass prairie, shrub lands, grasslands	N	Y	Infrequent and transient, not analyzed in detail	0	0	0
Golden Eagle <i>Aquila chrysaetos</i>	Hilly to mountainous areas, cliff and large trees for nesting	Y	Y	See Migratory Bird analysis	0	0	0
Great Blue Heron <i>Ardea herodias</i>	Wetlands, rivers and lakes with large trees for nesting	N	Y	No impacts to wetlands or reservoirs expected, not analyzed in detail	0	0	0
Green-tailed Towhee <i>Pipilo chlorurus</i>	Shrub communities	Y	Y	Potential increase in shrubs from harvest of encroaching ponderosa pine. See Migratory Bird analysis	0	+	+
Lark Bunting <i>Calamospiza melanocorys</i>	Short and mixed grass communities	Y	Y	See Migratory Bird analysis	0	+	+
Loggerhead Shrike <i>Lanius ludovicianus</i>	Open landscapes with short vegetation, pastures, and riparian	Y	Y	See Migratory Bird analysis	0	+	+
Long-eared Owl <i>Asio otus</i>	Hedgerows, woody draws, juniper thickets and the forest edge	Y	Y	See Migratory Bird analysis	0	+	+
Pinyon Jay <i>Gymnorhinus cyanocephalus</i>	Ponderosa pine woodlands	P	Y	See Migratory Bird analysis	0	0	0
Red-headed Woodpecker <i>Melanerpes erythrocephalus</i>	Riparian forest, open savanna, and snags	Y	Y	See Migratory Bird analysis	0	0	0
Sage Thrasher <i>Oreoscoptes montanus</i>	Big sagebrush	P	Y	See Migratory Bird analysis	0	+	+

⁴ Y- Observed in project area, P- Potentially present; no recorded observations in project area but present nearby or on the District, N- Not present

⁵ Options in determination of effects: (1) + = positive impact; (2) 0 = neutral or no impact; and (3) - = negative impact.

Veery <i>Catharus fuscescens</i>	Dense riparian deciduous forests	Y	Y	See Migratory Bird analysis	0	0	0
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Table 6 Montana Species of Concern considered for Threemile project analysis that were not included in other sections

Common Name	General Habitat Requirements	Present in Project Area ⁴	Habitat in Project Area	Description of Effects on Habitat or Species	Determination of Effects ⁵		
Scientific Name					No Action	Alt A	Alt B
Montana Species of Concern							
Fringed Myotis	Sagebrush grassland, woodland habitats, rock crevices	P	Y	See Bat analysis	0	0	0
<i>Myotis thysanodes</i>							
Hoary Bat	Forested areas, riparian corridors	Y	Y	See Bat analysis	0	0	0
<i>Lasiurus ciereus</i>							
Little Brown Myotis	Forested areas with snags, caves and mines	Y	Y	See Bat analysis	0	0	0
<i>Myotis lucifugus</i>							
Merriam's Shrew	Sage brush, grasslands	P	Y	Minimal effects on grasslands and sagebrush	0	0	0
<i>Sorex merriami</i>							
Snapping Turtle	Rivers, reservoirs, streams	P	Y	No impacts to waterways or reservoirs	0	0	0
<i>Chelydra serpentina</i>							
Spiny Softshell	Large rivers, lakes and ponds	N	N	None	0	0	0
<i>Apalone spinifera</i>							

⁴ Y- Observed in project area, P- Potentially present; no recorded observations in project area but present nearby or on the District, N- Not present

⁵ Options in determination of effects: (1) + = positive impact; (2) 0 = neutral or no impact; and (3) - = negative impact.

Effects Analysis

Proposed changes in vegetation characteristics including: cover, structure, spatial distribution, and interspersions, may affect wildlife species use in the Threemile Project area. Effects of the proposed action and alternatives are discussed separately in this report for each species and/or their habitat as identified in Table 2. Predicted effects on wildlife habitat by proposed treatments were evaluated using Geographic Information System (GIS) tools in the program ArcMap 10.2 (ESRI 2011). These tools were used to estimate current, post-treatment, and future conditions.

Data for vegetation and wildlife habitat effects analysis was primarily based on geodatabase information stored in R1-VMap (Barber and Vanderzanden 2009). This geodatabase is used to produce four primary map products; lifeform, tree canopy cover class, tree diameter, and tree dominance type. Non-forest map classes (e.g., grassland and shrubland vegetation communities) are also included for the Sioux and Ashland Ranger Districts of the Custer Gallatin National Forest. This geodatabase is used to produce products to meet information needs at various levels of analysis per the USFS National and Regional direction established by the Existing Vegetation Classification and Mapping Technical Guide (Brohman and Bryant 2005) and the Region 1 Multi-level Classification, Mapping, Inventory, and Analysis System (Berglund et al. 2009). Accuracy assessment of R1-VMap vegetation information was completed in February 2010 (Vanderzanden et al. 2010). For the Custer National Forest, overall vegetation dominance accuracy was 74%; tree size class and tree canopy class were 72% and 63% accurate, respectively.

Spatial and Temporal Bounds

The Threemile project area boundary (34,540 acres) was used for the primary assessment of direct and indirect effects to wildlife for this report but may have been expanded to the boundary of the Ashland Ranger District (436,000 acres) for some species. The project area boundary was large enough to address real and potential direct and indirect effects to populations and habitats evaluated by this report. Cumulative effects were assessed for the project area and the Ashland Ranger District as a whole.

Wildlife effects analysis considered a short term (0-10 year) and a long term (10 to 60 year) time scale. The short term time scale represents disturbance to the landscape during project activities and impacts before natural regeneration. The long term scale described how potential effects of the proposed treatments may impact habitats as regeneration occurs.

Regulatory Framework

Custer Forest Plan

The Custer National Forest Land and Resource Management Plan (hereafter Forest Plan, USDA 1986) provides standards and guidelines defined by management areas.

- Through the National Forest Management Act of 1976 (NFMA), National Forests are charged with preserving and enhancing the diversity of plants and animals consistent with overall multiple-use

objectives stated in the Land and Resource Management Plan (Forest Plan) (NFMA 16USC 1604(g) (3)(B)). Forests must also provide habitat capable of maintaining viable populations of wildlife species, and are directed to select management indicator species (MIS) to help ensure species viability (USDA, 1986. P. 17-18). The Forest will provide for the maintenance and improvement of habitats for Habitat Indicator Species / Management Indicator Species (USDA, 1986, P. 18).

- Identified forest-wide management directions relevant to wildlife concerns for the Threemile project include:
 - The goal for riparian areas and woody draw management is to manage for water quality, provide diverse vegetation, and protect key wildlife habitat in these areas from conflicting uses. Riparian areas are critical for the maintenance of water quality and woody draws provide valuable wildlife habitats. Uses and activities that adversely impact these areas will be mitigated.
 - The goal of wildlife and fisheries management is to manage and/or improve key wildlife and fisheries habitats, to enhance habitat quality and diversity, and to provide wildlife and fish-oriented recreation opportunities. Most of the critical habitat areas have been incorporated into management areas that maintain or improve these key habitats. Wildlife and fisheries management is considered in all management areas and the level of wildlife habitat management will increase over time.
 - The goal for the management of Threatened and Endangered plant and animal species is to provide habitat that contributes to the recovery of the species.
- Habitat Indicator Species for areas where specific habitat exists, unless otherwise stated in management area standards, includes:

Habitat Indicator List	
Habitat	Indicator Species
Timber:	
old growth	goshawk
dog hair ponderosa pine	whitetail deer
aspen	ruffed grouse
open savanna	western kingbird
Riparian:	
tree	northern oriole
shrub	yellow warbler
Hardwood Draw:	
tree	ovenbird
shrub	rufus-sided towhee
Evergreen Shrubs:	
sagebrush	Brewers sparrow

- Key Species/Critical Timing Periods:

Eagles**Nesting**

Inactive Nests: February 15 to May 1

Active Nests: February 15 to July 15

Disturbance Zones*: 1/2 mile no disturbance during nesting, 1/4 mile no disturbance (NSO stipulation)

Falcons

Nesting: March 15 to July 20 or fledging

Disturbance Zones*: 1/4 mile no disturbance (NSO stipulation in oil and gas leases)

Merlins

Nesting: March 15 to July 15 or fledging

Disturbance Zones*: 1/4 mile no disturbance (NSO stipulation in oil and gas leases)

Prairie Grouse

Dancing grounds: March 1 to April 30

Disturbance Zones*: no ground disturbing activity within 1/4 mile of dancing grounds.

*All disturbance zones are line of sight distances up to specific distance such as 1/2 mile.

Management Areas

Relevant wildlife directions and prescriptions for management areas that are known to occur within the Threemile project area are:

Management Area B – To maintain existing fish and wildlife habitats. These habitats will be improved where improvement would be consistent with other resource needs. Wildlife resources will be protected or enhanced.

Management Area D – Includes general wildlife habitat ecosystems. Diversity and quality of wildlife habitat will be considered for all wildlife species and managed for mule deer on the Ashland Ranger District. Some short-term habitat impacts may be necessary to achieve long-term wildlife goals.

Management Area G –Silvicultural systems will consider other resource needs such as wildlife habitat. Proposals will analyze wildlife values and potential impacts including but not limited to forage/cover ratio, snag densities, road management opportunities, winter range requirements, roost areas, streambank vegetation, and siltation potential. Unique wildlife features will be maintained such as elk wallows and nesting sites for key birds. Cavity nesting habitat will be maintained by retaining two snags per acre.

Management Area M – Riparian ecosystems will be managed to promote and maintain viable riparian dependent wildlife populations and requisite habitat. Stream bank stabilizing vegetation, snags, and future snag recruitment will be maintained along the aquatic/terrestrial interface at a minimum of 30 feet.

Management Area N – Woody draw ecosystems approximately ≥500 feet in length containing juniper, green ash, birch, aspen, or other hardwood species will be managed for snag dependent species, TES, and selected species defined in Management Area D where these 2 areas overlap

Federal Law

The Ninth Circuit case law has established that analysis of habitat quantity and quality can be used as a reliable proxy for species viability. See *Lands Council v. McNair* (Mission Brush) 537 F.3d 981,998-999. Species presence on the Ranger District and/or in the project area is documented (USDA 2011).

Potential effects of each alternative on these species and/or their habitats are analyzed in detail due to known presence of individuals or habitat in the Threemile area. These species/habitats are summarized in Table 3.14.1, and evaluated in detail. Habitat descriptions are based on current information located in the Montana Natural Heritage Program (2010) Montana Field Guide.

Multiple Use Sustained Yield Act of 1960

It is the policy of the Congress that the national forests are established and shall be administered for outdoor recreation, range, timber, watershed, and wildlife and fish purposes (16 USC 2 (I); Sec 528). The terms multiple use and sustained yield are defined as:

“The management of all the various renewable surface resources of the national forests so that they are utilized in the combination that will best meet the needs of the American people; making the most judicious use of the land for some or all of these resources or related services over areas large enough to provide sufficient latitude for periodic adjustments in use to conform to changing needs and conditions; that some land will be used for less than all of the resources; and harmonious and coordinated management of the various resources, each with the other, without impairment of the productivity of the land, with consideration being given to the relative values of the various resources, and not necessarily the combination of uses that will give the greatest dollar return or the greatest unit output (multiple use).”

“The achievement and maintenance in perpetuity of a high-level annual or regular periodic output of the various renewable resources of the national forests without impairment of the productivity of the land (sustained yield).”

National Forest Management Act

Sensitive species are managed under the authority of the National Forest Management Act (NFMA) and are administratively designated by the Regional Forester (FSM 2670.5). FSM 2670.22 requires the maintenance of viable populations of native and desired non-native species and to avoid actions that may cause a species to become threatened or endangered. The NFMA directs the Forest Service to “provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple-use objectives.” [16 U.S.C. 1604(g)(3)(B)]. Providing

ecological conditions to support diversity of native plant and animal species in the planning area satisfies the statutory requirements. The Forest Service's focus for meeting the requirements of NFMA and its implementing regulations is on assessing habitat to provide for a diversity of species.

FSM 2672.42 directs the Forest Service to conduct a biological evaluation (BE) to analyze impacts on Sensitive species. If any unmitigated, significant effects are identified in the BE, the Forest Supervisor must make a decision to allow or disallow the impact. If the significant effects would result in a trend toward federal listing, the Forest Supervisor cannot allow the project to proceed. The sensitive species analysis in this document meets the requirements for a BE as outlined in FSM 2672.42.

Endangered Species Act

The Custer Forest Plan requires the Forest to comply with the Endangered Species Act of 1973 as amended, and further the purposes of the Act by carrying out programs for the conservation of listed threatened and endangered species. The Forest Plan also requires that a biological evaluation of potential impacts to T&E species and their habitat be made for every project undertaken by the Forest Service.

Project Specific: The included analysis serves as the biological evaluation documenting potential impacts. A biological assessment will be submitted to the U.S. Fish and Wildlife Service for concurrence prior to release of the Threemile EA. All alternatives comply with the ESA.

Bald and Golden Eagle Protection Act

The Bald and Golden Eagle Protection Act (16 USC 668a-d) prohibits any form of possession or taking of both bald eagles and golden eagles. The Final Rule's definition of disturb is defined in regulations at 50 CFR 5226; 22.3 AS: "To agitate or bother a bald or golden eagle to a degree that causes, or is likely to cause, based on the best scientific information available, (1) injury to an eagle, (2) a decrease in its productivity, by substantially interfering with normal breeding, feeding, or sheltering behavior, or (3) nest abandonment, by substantially interfering with normal breeding feeding, or sheltering behavior. ..." (USFWS, 2010.03.23, P. 4). The management goal is prevent the decline of breeding populations (USFWS, 2010.03.23, P. 4).

Project Specific: The No Action Alternative and all Action Alternatives would be consistent with applicable laws, regulations, policy and direction for bald eagles under this Act.

Migratory Birds, EO 12962 of January 10, 2001

Executive Order 13186 requires agencies to ensure that environmental analyses evaluate the effects of federal actions and agency plans on migratory birds, with emphasis on species of concern. The Forest Service is required by the NFMA to "provide for diversity of plant and animal communities based on the suitability and capability of the specific land area in order to meet overall multiple use objectives." A wide variety of Neotropical Migratory Bird species are dependent on a landscape with diverse vegetation.

Project Specific: The No Action Alternative and all Action Alternatives would be consistent with applicable laws, regulations, policy and direction for migratory bird species addressed in this analysis.

Methodology

Information Sources

Presence, absence, and survey effort information for analyzed species was retrieved from the Montana Natural Heritage Program website (MNHP 2018). This website is the repository for the best available information regarding species distributions, sightings, and surveys within the state of Montana.

Affected Environment

Existing Condition

The Ashland Ranger District and Threemile project area may provide habitat for a variety of wildlife species including federally listed species, ungulates, carnivores, small mammals, resident and migratory birds, amphibians, and reptiles. The project area consists of 63% (20,788 acres) open grasslands, transition forest, shrub lands and areas of sparse vegetation with ponderosa pine representing the remaining 37% (12,136 acres). The existing condition provides habitat for both grassland/shrub land species and wooded species to be provided for while also creating habitat with natural edges and openings. Within both grassland and timbered areas, inclusions of deciduous woody species occur along drainages and riparian areas, often dominated by green ash with choke cherry and plum understories. Timbered areas that have not been disturbed within the project area have high canopy cover (>40%) and large trees (>10" dbh) providing for species that require dense or old stands. The project area is subject to annual livestock grazing and wildfires. Surrounding the project area, wildfires have impacted much of the District, replacing many timbered stands with standing dead trees or downed-dead timber.

Desired Condition

Wildfires have reduced the extent of forest cover across the district, the long-term Forest Plan Forest-wide and Management Area direction is to have a mosaic of resilient forest cover and re-establish forest cover across the Ashland Ranger District where it has been lost to wildfire mortality. The desired condition aims to manage for a heterogeneous forested landscape with a diverse age and size structure that includes old growth, understory structure and composition, patch size, and pattern. Non-forested areas would be managed for diverse native species composition and structure.

Environmental Consequences

Northern Long-eared Bat

Regulatory Framework

The USFWS determined threatened species status for the northern long-eared bat (*Myotis septentrionalis*) in April 2015 listing the species in 9 eastern Montana counties (USDI 2015). The Final Rule listing includes a section 4(d) rule of the ESA that provides measures necessary and advisable for conservation of the species (USDI 2015). Under the 4(d) rule areas not yet affected by white-nose syndrome (WNS) are exempted from prohibition against all incidental take resulting from any otherwise lawful activity. The USFWS list of threatened and endangered species indicates that the northern long-eared bat is potentially present in Powder River County, Montana which encompasses the proposed project (USDI 2015). However, mist netting efforts and acoustic surveys have failed to detect this species in Powder River or surrounding counties and no conclusive genetic samples from this species have ever been collected. Currently the disease has not been found in Montana however it was recently detected

in Custer County, South Dakota, Goshen County Wyoming, and Mercer County, North Dakota, increasing the WNS Zone to much of the range of the Northern Long-eared bat, including Powder River County and the Threemile project area. This project is still eligible to consult with the USFWS under the 4(d) rule since hibernacula and maternity roosts will not be disturbed as there are no known locations within the project area.

Existing Condition

Montana encompasses the western edge of the northern long-eared bat's range with only 4 observations being recorded within the state before 2017. In 2017, 10 more individuals were confirmed along Missouri River in Richland County, approximately 175 miles North-East from the Ashland Ranger District. Northern long-eared have been confirmed in the Black Hills of South Dakota (~125 miles South-East) and Devils Tower National Park in Wyoming (~75 miles South-East). Surveys in 2005 detected the bats in the Slim Buttes and North Cave Hills Units of the Sioux District of the Custer National Forest (approximately 130 miles) however no genetic samples were collected and repeated surveys have failed to confirm its presence. Additional surveys have been conducted by the Montana Natural Heritage program since 2015 in potentially suitable pine and riparian habitats only finding bats in Richland County.

Northern long-eared bats are typically non-migratory. These bats use underground caves and cave-like structures (e.g. abandoned mines, railroad tunnels) as winter hibernacula. Rock features across the Ashland Ranger District could provide crevices that act as potential hibernacula habitat. The primary threat to the northern long-eared bat is from a fungal disease called white-nose syndrome which is likely to spread throughout its entire range. This disease typically affects bats in winter hibernacula, growing on bats and damaging skin enough to disturb hibernation. This causes bats to warm up and become active, wasting energy needed to make it through winter. There are no known wintering areas for this species within or near the Threemile project area. Because there are no known winter bat hibernacula within or near the project area there are no expected impacts to hibernating northern long-eared bat populations.

Summer habitat generally includes forested areas where bats find suitable roosts in trees either singularly or in colonies under loose bark, in crevices, or in cavities of both live and dead trees. Where roosts have been found in coniferous forest habitats, the majority of roost sites were found in snags rather than live trees (Perry and Thill 2007). In Devil's Tower National Monument northern long-eared bats were found roosting in Burr Oak (5-6" dbh), rock crevices, and mostly ponderosa pine (14-28" dbh). Cryan et al. 2001 found similar habits in the Black Hills with bats preferring large ponderosa pine snags but still utilizing live trees.

Northern long-eared bats feed on flying insects, using echolocation to detect and capture prey aerially. They will also glean insects from vegetation and water surfaces. Most foraging occurs under the forest canopy, but above the understory. Much of the data collected on this species indicates that mature forest structure provides important foraging habitat. However, foraging also occasionally occurs in small forest openings, over water sources and along roads (USDI 2015).

Bats require open water that allows for drinking and will frequently forage above these areas. Natural water sources for drinking and foraging are infrequently found on the Ashland Ranger District. While few reservoirs exist in the project area, stock tanks have the ability to fill this need.

Affected Environment

The northern long-eared bat could be impacted by commercial management activities impacting summer roosts, maternity roosts, foraging habitat, and winter hibernacula that could occur within the project boundary as described above. Specifically, this habitat includes large diameter snags and live trees, contiguous forest stands, and rock crevices. There are possible short-term impacts during the time of implementation to roosting bats that may be present in the project area, and long-term impacts after implementation to foraging area and the availability of snags for roosting. There are few impacts expected to any rock crevice hibernacula, but implementation of project activities could disturb hibernating bats.

Environmental Effects

The no-action alternative will have no impacts on bats in the short term when implementation would occur. Under this alternative, no roosting bats, maternity colonies, or hibernacula would be displaced by project activities, allowing any northern long-eared bats that may be present to continue to utilize current roosts. Snag recruitment would continue to occur through natural processes, providing for a low number of snags throughout the landscape. Foraging habitat would similarly remain unchanged, providing for forest habitat across the project area. In the long term, fires will continue to occur within the project area. If fires continue to burn at the intensity and frequency observed within the Three-mile project area, they will provide for reduced understory to allow for foraging and create snags for roosting habitat. However, if a large-scale fire occurs across the project area, bats would likely be displaced as foraging habitat would be reduced. While an abundance of snags for roosting would be created in the short term, few green trees would be remaining, reducing future snag recruitment. Any existing hibernacula would likely not be impacted.

Alternative A includes both commercial timber management and prescribed burning. During commercial harvest, large ponderosa pines that could act as roost trees may be removed, reducing available roosting habitat. Snags that are found within the harvest units would likely be retained but may be felled by harvesting equipment or if they pose a safety hazard. Similarly, the reduction of contiguous forested stands and forest structure may impact the availability of foraging habitat. Noise from harvest activities and prescribed burning may temporarily displace bats from roosting or hibernacula if winter activities occur. As treated stands age, the non-harvested ponderosa pine would eventually provide for snags on the landscape. However, there may be a reduction in large ponderosa pine that may also act as roosting habitat, but this may be provided for in surrounding un-treated stands. Given mitigation measures listed below, that the project area is not currently impacted by white-nose syndrome, and individuals are not known to occur on the district, the project activity is not likely to adversely affect populations of the northern long-eared bat.

Effects to northern long-eared bats would be similar in alternative B due to similar acreages of commercial harvest with fewer effects from prescribed burning. Providing for mitigation measures listed below and given that the project area is not impacted by white-nose syndrome, on the western edge of

the species range, and no individuals are not known to occur on the district the project activity is not likely to adversely affect populations of the northern long-eared bat.

Mitigation measures

The following mitigation measures will help to assure that the Threemile project is not likely to adversely affect any northern long-eared bats regardless of alternative chosen.

- a. There will be no tree removal within 0.25 miles of a known, occupied winter hibernacula year round. Currently, no known hibernacula are within in Threemile Project area however this mitigation measure will be applied if such a site is found.
- b. Avoid cutting or destroying known, occupied roost trees during the pup season (June 1 – July 31) or any trees within 150 feet of a known, occupied roost tree. There are no known roost trees within in Threemile project area however this mitigation measure will be applied if such a site is found.
- c. If a bat or bats (any species) are seen clinging to, crawling on, or flying from, a tree identified for harvest, the tree will be left standing until either a) no bats are seen on or near the tree, or b) after the pup season (after July 31). *This measure should be effective because: 1) any bat species would be protected; i.e. loggers would not be required to identify bat species, 2) northern long-eared bats switch tree roosts often – typically every 2 to 3 days (USDI 2015) and 3) young bats should have sufficient flight skills developed by the end of pup season to escape harm.*
- d. Leave all existing snags, greater than or equal to 4.5” diameter, which do not pose a safety hazard during project implementation.

Consultation with the US Fish and Wildlife Service is ongoing and project work is dependent on a concurrence of a not likely to adversely affect determination.

Northern Goshawk

Regulatory Framework

The northern goshawk (*Accipiter gentilis atricapillus*), hereafter called “goshawk”, is the Custer National Forest’s habitat indicator species for old-growth timber (pp. 18, Forest Plan, USDA 1986). The goshawk is protected under the Migratory Bird Treaty Act. Executive Order (13186 of 2001) clarified the responsibilities of Federal agencies regarding migratory bird conservation, and these responsibilities include inventory and monitoring. Currently, the northern goshawk has a conservation status rank of G5. This indicates the species is globally secure – common, widespread and abundant. The species is not considered a “species of greatest conservation need” by the state of Montana.

Existing Condition

At least 11 territories have been identified on the Ashland Ranger District during call-back surveys performed by the Montana Natural Heritage Program and the district biologists (MTNHP 2018). Within the Threemile Project Area surveys were conducted in 2005 and 2014 in the central region of the project area. No nests were detected during the surveys however there were 3 observations of goshawks (Maxell, 2016). During the 2017 field season no formal surveys were conducted but a nest with two fledglings was discovered within the project area.



Figure 1 One of two juvenile goshawks found by the Threemile Project area nest.

On the Ashland Ranger District, large wildfires burned 66% of National Forest System land between 1988 and 2012, reducing the extent of forest cover. These events reduced available nesting habitat by 27% across the district and affected at least 7 goshawk territories. In other instances tree mortality occurred several years after the wildfire, therefore effects to some goshawk habitat may not yet be known (Ashland Post Fire Landscape Assessment, 2014).

The Forest Plan defines old growth timber, but does not define old growth forest (USDA, 1986, pg 136). Therefore, the Forest uses Region One's definition of old growth as documented by Green et al. (2007). Thus defined, old growth in ponderosa forests on the eastside of Region 1 are characterized by single or multi-storied canopy, minimum age of largest trees is 180 years, ≥ 4 trees/acre with dbh > 17 inches, and a basal area ≥ 40 ft²/acre (Green et al. 2007). Old growth habitat type is not well represented in the Threemile project area. Historically, old growth in dry climate ponderosa pine forests probably comprised between about 40 – 90% of the landscape (Spies et al. 2006). However, fire suppression, increased frequency of stand replacing wildfires, and historically aggressive timber harvesting has decreased the extent of old growth across the western United States (Spies et al. 2006). Given the loose association of goshawks to old growth habitat in ponderosa forests on the eastside of Region 1 (Brewer et al 2009), goshawks are a poor indicator of management activities in old growth habitat.

Goshawks use large landscapes, integrating a diversity of vegetation types over several spatial scales to meet their life-cycle needs (Squires and Kennedy 2006). Goshawk home ranges or territories consist of at least three levels of habitat during the breeding season: 1) the nest area (about a 40-acre stand), 2) a post fledging area (PFA), and 3) some amount of general habitat used for foraging, with the diversity of forest vegetative composition, age and structure increasing beyond the nest area (Brewer et al. 2009).

These components are generally thought to encompass 1,400-8,650 acres (Brewer et al. 2009). Home ranges of adjacent pairs may overlap; however the PFA is the area that is defended and thus dictates the spacing of breeding pairs.

Proposed activities have the potential to affect goshawk through changes in nesting habitat, alterations of foraging habitat within a PFA or home range of a known breeding pair, or through displacement of individuals across the project area. The project level effects analysis considers effects to goshawk at multiple spatial scales. The analysis considers the direct and indirect effects of proposed actions within the 34,540 acre project area, while the cumulative effects are assessed at for the entire Ashland Ranger District as well as the regional population.

Methodology

FS Region 1 produced a document in 2009, titled *Northern Goshawk Northern Region Overview* (Brewer, et al. 2009) (referred to herein as “Overview”), which summarized existing knowledge about goshawk habitat needs, provided a consistent approach for analyzing available goshawk habitat, and listed other management considerations that need to be considered during project planning and analysis. The Overview described methods to classify goshawk habitat at multiple-spatial levels and provided a consistent methodology to classify PFA, foraging, and nesting habitat. The Northern Region Overview was used to provide the basic framework and models for this analysis. Further Forest level guidance in 2016 clarified nesting habitat constraints based on updated modeling efforts.

Nesting stands, the stand found immediately around the nest tree, were found to be in a variety of forest types but often more mature forest than surrounding areas with closed canopies and open understory. Goshawk territories may contain from 1 to 8 alternate nests. The alternate nests may be clumped in one to three nest stands (of about 40 acres each) or may be widely distributed, but are usually located within ¼ mile of each other (Squires and Reynolds 1997). Clough (2000) found that the size of the nest area was variable but birds often selected more mature stands about 40 acres in size, surrounded by younger forest and non-forested openings. Using stand exam data from nest location stands or biologist’s observations, a range of attributes for nest stands was calculated using R1 Vegetation Council algorithms. In ponderosa pine it is recommended that stands of at least 40% canopy cover and 10” diameter class trees exist to provide nesting habitat (Canfield, 2016). The availability of nesting habitat in stands of 40 or more acres is recommended to total at least 240 acres per 5000 acre territory. Based on the contiguous portion of grassland north of Threemile Creek that does not contain suitable nesting habitat, only the project area south of the Creek was used to estimate potential territories (~20,000 acres, 4 territories). Currently, within the direct and indirect effects area, 3,347 acres of potential nesting habitat is found in the project area with 53,964 acres being found across the district, the cumulative effects area. Across the Custer Gallatin National Forest, 792,461 acres of nesting habitat currently exist.

The Post-Fledging area, or PFA, surrounds the nest area as is used by the family group until the fledglings are no longer dependent on the adults for food. The size of the PFA is thought to vary but recommended to be maintained at 420 acres around a nest stand. The PFA varies depending on local conditions of the

habitat composition, prey availability, disturbance and risk of predation but contains late seral forest with 50%+ canopy cover and structural diversity in the understory. Within the PFA of the known nest in the project area, 69% is composed of trees over 10" dbh while the remaining 30% is open habitat consisting of shrubs, forbs or grasses. The project area falls within recommendations with 34% being composed of trees over 10" dbh and 64% open habitat.

Table 7. Diversity of PFA/foraging vegetation compared to range of studies reported by Brewer et al. 2009.

Habitat Component	Nest Stand PFA		Project Area		Ashland and Sioux RD	Brewer et al. 2009
	Acres	Percent	Acres	Percent	Percent	Percent
Tree 0.0-4.9"	0	0	20	0	2	4-17
Tree 5.0-9.9	0	0	653	2	6	6-66
Tree 10.0-+	290	69	11641	34	43	11-66
Canopy cover 50%+ and size >4.9"	161	38	2685	8	6	37-69
Shrub, forb, grass	126	30	21940	64	70	7-11

Affected Environment

Timber harvest has the potential to directly alter nesting and foraging habitat through removal of trees or changing structural components that are important to goshawks for nest site selection or that affect prey availability. One known breeding territory exists within the Threemile Project area. Proposed activities may also alter foraging habitat characteristics of the home range and/or PFA of that breeding pair.

Figure 2. Diversity of PFA/Foraging vegetation compared to range of studies reported by Brewer et al. 2009.

Goshawks use a broad-range of habitat conditions in their foraging area, which reflects their opportunistic, generalist diet (Brewer et al. 2009). Salafsky et al. (2006) found that alternate prey species are commonly substituted for one another as a function of prey habitat. Habitat requirements of primary prey species (tree squirrels, ground squirrels, hares, song birds, woodpeckers, and grouse) include a mosaic of young forest, mature forest, and openings (Squires and Kennedy 2006). Goshawks have been reported to hunt a variety of conditions including edges of forest and openings (riparian/clear-cut/grasslands-sage); non-forested openings a long distance from cover; dense, close-canopied forest; and open canopied forest (Reynolds et al. 2007, Samson 2006a, Squires and Kennedy 2006).

Breeding goshawks may be sensitive to disturbance, and project activities may cause individuals to avoid areas where increased human presence and use of heavy equipment and machinery reduce the desirability of areas otherwise suitable for nesting or foraging.

Effects of the project on goshawk nesting habitat within the analysis area and on foraging habitat in the home range and PFA of the pair and within the analysis area, along with an analysis of the potential for

project activities to disturb breeding goshawks were, therefore, selected as the resource indicators for this analysis. There are no established thresholds for these indicators that are used by the Forest as a target level for which to manage, and the FP does not contain any quantitative standards specific to these indicators. The recommendations for analyzing project impacts on goshawk provided in the Regional Overview were followed for this analysis. The conclusion of how changes in these indicators would affect goshawks was qualitative in nature.

Environmental Effects

Under the no action alternative, nesting, PFA, and foraging habitat within the project area will remain the same with no additional disturbance in the short term. Into the future, wildfire will continue to occur within the project area. Low intensity and small scale fires will continue to perpetuate the mosaic of habitats needed to support goshawks by creating openings, young stands, and regenerating habitat. In the event of a large scale fire, goshawk habitat would likely be reduced and could displace the current known nesting pair.

Alternative A would result in the reduction of nesting, PFA, and foraging habitat and create a potential for disturbance during the nesting season. In this alternative, 2,312 acres of nesting habitat would be treated resulting in 1,035 acres of remaining habitat. Based on recommendations to maintain 240 acres per 5000 acre home range, the nesting habitat exceeds the recommendation for the size of the timbered area south of Threemile Creek. Within the 420 acre PFA, 79 acres would be commercially treated, 6 would be commercially treated and prescribed burned, and 66 acres of non-forested land would be prescribed burned totaling 151 acres of treatment. 29% of timbered stands within the PFA will be commercially treated reducing canopy cover and likely the availability of forested prey species (Table 7). Long-term, as these stands regenerate, they may contribute to the mosaic within the PFA and foraging area that would continue to supply a prey base. If timing restrictions and activity buffers are followed, disturbance to the goshawks should be low.

Alternative B would have similar effects on nesting, PFA, and foraging habitat as Alternative A and would also create a potential for disturbance during the nesting season. In this alternative, 2,143 acres of nesting habitat would be treated resulting in 1,204 acres of remaining habitat. Based on recommendations to maintain 240 acres per 5000 acre home range, the nesting habitat exceeds the recommendation for the 4 home ranges in the timbered area south of Threemile Creek. Within the 420 acre PFA, 111 acres would be commercially treated, 6 would be commercially treated and prescribed burned, and 64 acres of non-forested land would be prescribed burned totaling 181 acres of treatment. 39% of timbered stands within the PFA will be commercially treated, reducing canopy cover and likely the availability of forested prey species (Table). The increased use within the PFA and foraging areas may reduce the utility of the PFA compared to alternative A. With implementation of timing restrictions and activity buffers, potential disturbance to nesting goshawks should be low.

Table 8. PFA components for the known goshawk nest stand, each action alternative and No Action.

Habitat Component	Nest Stand PFA	Alternative A	Alternative B	No Action
	Acres	% Acres Treated		
Tree 0.0-4.9"	0	0	0	0
Tree 5.0-9.9	0	0	0	0
Tree 10.0-+	290	29	39	0
Shrub, forb, grass	126	52	51	0

Conclusion

At the project level, both alternative A and B will reduce nesting within the project area. The Custer Gallatin and other forests in the Region still individually meet or exceed the threshold to maintain a viable regional population (Brewer et al. 2009). Project actions may affect the individuals nesting within the project area but would not have impacts to the overall population. To reduce disturbance effects, a 40 acre, year-round, no disturbance buffer will be placed around any existing nests and newly discovered nests. The nest buffer around the known nest is skewed to the east to include water features that have evidence of and observations of use by goshawks while utilizing the presence of ridges and draws to reduce disturbance. Additionally, the 420 acre PFA, centered on the nest will act as a no disturbance buffer from April 15 to August 15 to reduce disturbance until 30 days post fledging. Between action alternatives, treatment units in Alternative B are larger and more connected than in Alternative A, reducing the mosaic of habitat throughout the project area and within the PFA. Impacts to the PFA are larger in Alternative B and therefore may reduce the utility of the area, having greater impacts to the known nest.

Big Game

Regulatory Framework

"Big game" on the Ashland ranger district includes mule deer, white tailed deer, elk, and pronghorn. White-tailed deer are included in the Forest Plan as an Indicator Species for dog hair ponderosa pine. Elk, mule deer, white tailed deer, and pronghorn are all listed as Major Interest (Key) Species in the forest plan and are "species commonly hunted" on the district (USDA 1986). Mule deer are also a selected species for Management Area D which is a multi-use management area to maintain and improve wildlife habitats.

Existing Condition

In the spring, fall and summer, mule deer range throughout most of the district utilizing prairies and interspersed woodlands. Summer forage consists of a mix of available grasses and shrubs, utilizing agricultural lands when available. Riparian and woody-draw areas can be important for fawning. Winter ranges consist of south aspects on steep hills with scattered juniper and ponderosa pine and is dispersed across the district. Shrubs such as big sagebrush, skunkbrush sumac, rubber rabbitbrush and silver sage

act as the main winter forage component while juniper thickets provide thermal. Mule deer are found across the district during winter months preferring openings opposed to cover. While winter ranges were delineated in the Ashland Deer Guidelines, the reliance of these areas are based on topography cover (Ashland Ranger District Deer Guidelines, 1990). Mule deer populations are heavily reliant on the availability of summer forage especially in seasons before harsh winters (Mackie et al 1998). Localized surveys on the Ashland Ranger District are consistent with population increases seen across Region 7 over the last 5 years (MTFWP, 2018).

White-tailed deer preferentially inhabit riparian, woody-draw, and dense pine habitats year-round. Summer forage consists of a mix of available grasses and available shrubs while winter forage is heavily reliant on shrub browse (Ashland Ranger District Deer Guidelines, 1990). White-tail deer are closely tied to agricultural lands and will often forage in these areas. Increases in white-tailed deer have been seen throughout Region 7 over the last 5 years (MTFWP, 2018).

Pronghorn prefer open sagebrush and grasslands and will often select for sagebrush habitat in the winter where forage is available. Trend areas within hunting district 704 have shown consistent numbers of pronghorn over the last 3 years with wide fluctuations occurring before that time.

Elk select for timbered, coniferous forest with openings of grassland. Winter ranges typically overlap with summer ranges on the Ashland Ranger District with additional preference for cover and open forage. Elk have been observed utilizing agricultural lands adjacent to the forest and riparian corridors. Distribution across the district is heavily influenced by avoidance of disturbances such as roadways. Elk populations have been steadily increasing on the Ashland Ranger District since 1987 and have exceeded the management goal of 500 elk for the Custer Forest Elk Analysis Unit (EAU) in district 704.

The Ashland Ranger District is one of the single, largest contiguous blocks of public land in southeast Montana. Given the abundance of animals and the many opportunities for big game hunting, is one of the primary recreation activities on the District. It is difficult to determine how many hunters use the District during big-game hunting season, or how many may be on the District at any one time as FWP issues unlimited permits for general and archery deer for the hunting district. Estimates for hunter numbers from district 704 have shown steady increases between 2006 and 2016. Deer hunters went from 3353 in 2006 to 4692 in 2013 while elk hunters almost tripled, increasing from 458 to 1119 between 2006 and 2016 (MTFWP, 2018). The opening weekend of big-game hunting season typically has the highest number of hunters on the District.

Post-wildfire habitat conditions include a major reduction in the area covered by forest leading to a decreased cover from large trees. Additional cover from regenerating stands or standing dead timber in some areas providing visual cover and security however thermal cover has not been replaced. As hunter numbers have increased since the fire events, disturbance from vehicle traffic on roads and hunters throughout the forest, reducing security across the forest.

Methodology

During the development of the Custer Forest Plan elk were rarely found on the Ashland Ranger District, since then they have established a quickly growing population providing increased opportunity for hunting on the district. This elk population is of special interest to the public as noted by scoping

comments, increases in forest utilization during the elk hunting seasons, as well as conversations with the public and with wildlife managers. Guidelines for mule and white-tailed deer are provided in the Ashland Ranger District Deer Guidelines (USDA, 1990) while the US Forest Service and Montana Department of Fish Wildlife and Parks Collaborative Overview and Recommendations for Elk Habitat Management on the Custer, Gallatin, Helena, and Lewis and Clark National Forests (MT FWP and USDA, 2013) and the Custer, Helena, Gallatin and Lewis and Clark National Forests Framework for Project Level Effects Analysis on Elk (USDA Forest Service 2013). For the purposes of this project the effects on project work for big game were analyzed using guidelines for elk based on consultation with state game biologists (DeVore, personal comm. 2018). The four main indicators of big game productivity that will be analyzed are security, habitat effectiveness, cover, and forage and are described in detail below (USDA 2013). Indicators follow the Framework for Project Level Effects on Elk which are consistent with management guidelines for deer in the Ashland Deer Guidelines. Given the consistency of indicators, elk framework was chosen as the guiding document since it was more recently developed and was able to consider changed conditions and more recent science.

Security is the combination of several factors (vegetation, geography, and topography) that allow game to remain in an area under hunting stress. The availability of secure habitat influences game displacement from public lands and to marginal habitats. The major impacts to secure habitat occur from road use by hunters. Security is therefore measured by the amount of land available to game that occurs at least 0.5 miles from a road in areas of 250 acres or more. Hillis et al. recommends at least 30% of an area to be secure habitat with areas being evenly distributed throughout (1991). Hillis does add additional caution that strict adherence to the guidelines should be avoided. The Elk Framework expands upon this statement recommending that knowledge of local conditions and elk use patterns should be taken into consideration and local biologists should be consulted to best understand the impacts to security habitat (MTFWP and USDA 2013).

Habitat effectiveness is the effect of motorized routes during summer months and is measured by calculating open motorized route density according to the R1 Eastside Assessment Habitat Effectiveness Model. Habitat effectiveness impacts how game use their foraging habitats during the spring and summer, impacting fat accumulation for winter, rut, and calving seasons (Canfield et al 1999). Habitat effectiveness is measured by the quantity of open roads per square mile in a moving window. Road densities greater than 2 miles of road per one square mile are no longer considered effective habitat.

Cover is used year-round by big game for bedding, thermal relief, and wallowing and is defined by vegetation capable of hiding 90% of a standing adult elk from the view of a human at 200 feet. Canfield (2011) used field data to demonstrate that canopy covers over 40% were sufficiently dense to cover 90% of an adult elk (4.5') and stands that had similar canopy cover but have since burned were still able to provide functional hiding cover. Variable amounts of hiding cover have been recommended from 66% to 40% however MTFWP and USFS recommend managing within the natural range of variation (MTFWP and USDA, 2013).

Forage consists of vegetation that elk consume including grasses, forbs, and woody vegetation. Deer and elk will use a variety of grasses and shrubs as forage depending on season and availability. Availability of high quality forage impacts pregnancy rates and winter survival. Forage is often found in open canopy systems, agricultural, and riparian areas but grasses found in more open ponderosa pine is often used. No quantity for forage is recommended.

Since the Custer Forest Elk Management Unit (EMU) is the majority of MTFWP Region 7 and very large in proportion to the project area, the majority of effects will be analyzed at the project level and district scale (USDA 2013). Similarly, EAU's have been drawn at watershed levels and the project area contains Home Creek 2, Tenmile Creek2, Threemile Creek 3. This fine scale is too small to adequately analyze effects of elk which have large home ranges and can travel great distances. Indicators will be analyzed in both the short- term (during project activities) and the long-term (10-40 years after implementation).

Affected Environment

Due to the density of roads, security habitat is sparse throughout the Ashland Ranger District but does meet recommendations with a third of habitat being considered secure. This is displayed in table 8 which shows the amount of secure and non-secure habitat across the District and in the project area before, during, and after activities. However the topography across the district can block roads and road noises and deterring hunters from elk, adding to secure habitat (Devore, 2018). Across the district, administrative roads exist and are used intermittently by permittees and Forest Service employees but use is generally not high enough to be included in security analysis. Travel plan violations occur, especially during big game seasons, on closed trails and roads that were visible from open to motor vehicle travel (USFS, 2013). While it is not quantifiable, these violations reduce security. While security habitat may be altered within the project area, there is enough secure area across the district to provide for big game (DeVore, 2018).

Table 9. Amount of secure and non-secure habitat across the Ashland Ranger District and in the Threemile Project area, before and during Alternative A and B and after action Alternatives

	District		No-Action		Alternative A		Alternative B		After Alternatives	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
Non-Secure	286889	66%	21014	64%	25780	78%	24738	75%	20533	62%
Secure	149260	34%	11910	36%	7144	22%	8186	25%	12392	38%

The majority of habitat across the Ranger District meets habitat effectiveness above 50% meaning that elk and big game use potential is adequate. Table 8 shows the habitat effectiveness of the District, Threemile Project area before and during the project. Over a quarter of habitat across the District is

100% effective only 8% below 50% effectiveness. In total over 400,000 acres of land on the district contribute to big game habitat effectiveness. Proportions within the Threemile project area are similar with 30% being entirely effective and only 6% below the 50% effectiveness range. The vast majority of the project area is effective big game habitat.

Table 10. Habitat Effectiveness determined by road density in acres and percentages of area within the District and Threemile Project area for all alternatives.

Route Density Class	District		No-Action		Alternative A		Alternative B	
	Acres	Percent	Acres	Percent	Acres	Percent	Acres	Percent
0.0 mi/sqmi	122805	28%	9885	30%	5785	18%	6527	20%
0.1-1.0 mi/sqmi	113004	26%	7790	24%	6626	20%	6944	21%
1.1-2.0 mi/sqmi	164307	38%	13241	40%	10753	33%	10511	32%
2.0+ mi/sqmi	36032	8%	2008	6%	9760	30%	8943	27%

Green cover has been reduced on the Ashland Ranger District since large fires occurred in 2012 however big game numbers have continued to increase. Many of the green trees burned are still standing and provide cover but will fall in upcoming years but cover will be replaced with regenerating trees. Over 139,000 acres of potential cover exist composing 28% of the District. Within the Threemile project area, over 12,000 acres of cover exist with 6,700 acres occurring in spring-fall habitat while 5,300 in winter habitat. 37% of the project area is considered cover. Additional cover in the form of juniper trees is dispersed thought the district and project area. While this habitat cannot effectively be quantified, junipers exist both in timbered and non-timbered stands. These dense trees provide thermal and visual cover year round for all species of big game. Cover recommendations in the Ashland Deer Guidelines recommends 40% cover but it is likely that this is outside the natural range of variation for the District and game continue to thrive despite low cover throughout the district (Ryan DeVore Pers. Comm. 2018). Openings on south slopes provide both forage and thermal radiation during the winter months, especially for mule deer, and are more important to this species than cover (DeVore, 2018).

Table 11. Affected, existing, not potential cover, and other cover for big game in the district and Threemile project area separated by season of use.

	District	Threemile
Affected, Non-Functioning Hiding Cover - Spring, Summer, Fall	93448	7
Affected, Non-Functioning Hiding Cover - Winter	2029	17
Existing Hiding Cover - Spring, Summer, Fall	47615	1939
Existing Hiding Cover - Winter	6694	2944
Not Potential Cover	266950	20690
Other Forest Cover - Spring, Summer, Fall	74459	4848
Other Forest Cover - Winter	10401	2388

Forage is available throughout the District and the project area. However, cattle are permitted to graze across the District, removing some of the available grasses. 72% of the District is considered primary rangeland for cattle with 7% being secondary and 20% transitory range. Primary range is those areas that are within 1 mile of water sources and on terrain less than 35% slope. Cattle congregate on the more convenient gentle terrain such as valley bottoms, riparian and hardwood draw zones, and ridgetops. Secondary rangelands are those areas that produce forage but may be too far away from water or access is impeded due to natural barriers. Allotments are allowed to be grazed at 55% use in primary key areas. Typically, range condition throughout the District as well as within the project area, based on transects, are rated as fair to good and have the ability to support wildlife. Cattle infrequently utilize areas outside of primary range leaving the majority of those lands open for big game foraging that have the ability to travel distances for water and access steeper terrain.

Table 12. Acres, available forage, and permitted grazing AUMs with season of use for each allotment within in Threemile project area.

Allotment Name	Allotment Acres	Primary Acres	Permitted AUMs*	Season of Use
Coleman Draw	4169	3963	1269	4/4 – 10/15
Lower Home	2867	8356	2398	5/20 – 11/15
Shorty Creek	2056	5969	6353	5/20 – 11/30
10 Mile	8437	7426	2645	5/1 – 11/30
10 Mile/3 Mile	12265	11033	5551	5/20 – 11/30
Total	29,794	36,747	18,216	

*AUM – Animal Unit Month. An AUM is the approximate amount of forage a 1000 lb. cow will eat in one month.

*Not all Allotment Acres or Primary Acres are within the Threemile Project Area boundary.

Environmental Effects

Under the No Action alternative, security, habitat effectiveness, cover and forage will remain unchanged. Fire regimes will remain the same, altering the landscape within the natural range of variation. Big game populations would likely continue to follow current increasing population trends and continue to provide recreation opportunity for hunters across the district.

Under Alternative A, security and habitat effectiveness will be reduced in the short term, cover will be reduced for 10-40 years until trees can regenerate. Forage values will be increased until cover returns. Security would be reduced below recommended levels within the project area, reducing the ability of the area to retain big game during the hunting season while project work continues. Depending on the effectiveness of road closures, motor vehicle trespass will likely occur during the big game season (USFS, 2013). However, in the long term, security will increase with the decommissioning of 2.1 miles of road. Habitat effectiveness will similarly be reduced by the increase in road quantity and the use of administrative routes during project work (See Additional Figures). Habitat effectiveness should increase after project work is completed with the decommissioning of 2.1 miles of road within the project area. Cover will be reduced within the project area to about 27%, falling below recommendations but remaining consistent with what is seen across the district. Throughout the district, cover will only be

reduced by 0.6% allowing big game can seek cover outside the project area. Cover will return once trees have regenerated and grown to 4.5 feet in 10-40 years. Prescribed burning will remove junipers from treated stands but these trees are not expected to be impacted by harvest treatments. Forage will increase with commercial thinning and burning activities, benefiting big game in the short term. Forage will likely return to current levels after trees have regenerated in 10-20 years.

Project activities occur mostly within timbered stands with only 1,508- 1,971 non-timbered acres treated with prescribed burning. These burns will increase forbs and increase the quality of forage available. Therefore, project activities are expected to have a slight positive impact on pronghorn within the project area.

Alternative B offers similar effects to habitat effectiveness and forage as alternative A. Alternative B offers better security retention during project activities due to the distribution of secure habitat across the project area and the increase to overall security will also be seen. Effects to quantity of cover will be comparable between units however, the expanded size of individual units reduces the amount of green tree cover between units. This could reduce the movement of game across the project area and between areas of high cover or security by reducing the utility of small scale corridors. However, additional junipers may be retained by the reduced acres of prescribed burning.

In order to mitigate for reductions in security, habitat effectiveness, and cover it is recommended to retain at least 75' of hiding cover along open travel plan roads. As demonstrated below. This mitigation



Figure 2. Visibility of an elk decoy 75 feet from the road in unit 183.

is expected to reduce impacts to game from road use by reducing visibility of game to hunters and reducing sound impacts from vehicle traffic increasing the amount of habitat that can be used without disturbance (Montgomery et. Al, 2013). While 75' may not provide screening cover in all areas, visual and picture surveys indicate that in many instances it will adequately screen an elk.

Conclusion

Negative effects to big game security and habitat effectiveness are likely limited to the duration of project activities with positive effects seen following completion. However roads must be effectively closed after project completion. During project work, big game may be more frequently disturbed and displaced. Cover is available throughout the district and can provide for big game until cover is replaced within in 10-40 years. Overall negative impacts on big game will be short term, with positive effects of road closures appearing after project activities.

Bats

Regulatory Framework

The pallid bat, Townsend's big-eared bat, and spotted bat are all identified as Region One sensitive species in Montana on the Custer National Forest units. The hoary bat, fringed myotis, and little brown myotis are Montana state species of concern.

Existing Condition

Bats on the Ashland Ranger District use a variety of habitats including those suitable for foraging and roosting, including maternity roost, day roost, summer roosts and winter hibernacula. Pallid bats use sagebrush and grassland habitats. Little brown myotis, Townsend's big-eared bat, and hoary bats are closely tied to forested areas. Spotted bat, and fringed myotis utilize both habitats. All bat species need water and will forage over open water sources. Additionally, rock out crops, caves, snags, and live trees with crevices are used by all bat species as roost sites. All these habitats are found within the Threemile project boundary and recent surveys by Montana Natural Heritage Program have found all bat species listed above in or near the Threemile project area with the exception of the spotted bat which has not been detected on the district since 1983. Further analysis of existing forest condition can be found in the analysis for the northern long-eared bat.

Affected Environment

Sensitive bat species have the potential to be impacted by commercial management activities impacting summer roosts, maternity roosts, foraging habitat, and winter hibernacula within the project boundary as described above. This habitat includes large diameter snags and live trees, contiguous forest stands, and rock crevices. There are possible short term impacts during the time of implementation to roosting bats that may be present in the project area, and long term impacts after implementation to foraging area and the availability of snags for roosting. There are few impacts expected to any rock crevice hibernacula but implementation of project activities could disturb hibernating bats. Impacts to grassland and sagebrush environments are expected to be caused by prescribed burning but impacts will likely be short term as foraging habitat would be returned within weeks to months as vegetation recovers.

Environmental Effects

Under the no action alternative there will be no impacts to sensitive bat habitat for roosting or foraging. Timbered roosts and foraging habitat will remain unchanged unless unpredictable fire events displace bats. No noise disturbance would disturb bats roosting in rock crevices and prescribed burning will not temporarily displace grassland bats.

Effects from action alternatives A and B to timbered stands are similar to what was described in the northern long-eared bat analysis. Prescribed burning may additionally impact sensitive bat species by temporarily displacing bats and altering their foraging habitat. These effects are expected to be temporary and to last only until grasses and sagebrush return. If mitigation measures described in the northern long-eared bat analysis are followed, these actions may impact individual bats but are not expected to contribute to a loss of viability of the populations.

Migratory Birds

Regulatory Framework

Migratory birds are a very diverse group, which includes raptors, waterfowl, shore birds, upland game birds and songbirds. Migratory bird species are protected under the Migratory Bird Treaty Act (MBTA). Executive Order 13186 requires agencies to ensure that environmental analyses evaluate the effects of federal actions and agency plans on migratory birds, with emphasis on species of concern. The Montana Natural Heritage Program (MNHP) Environmental Summary Report (Montana Natural Heritage Program 2017), 2008 Birds of Conservation Concern (BCC) report (US Fish and Wildlife Service 2008), and the online iPaC Resource (US Fish and Wildlife Service) were used to identify focal species for this project. Species were also selected from the Region 1 list of sensitive species and the Custer forest plan Habitat Indicators and Key species lists (pp. 180-181, Forest Plan, 1986). The MNHP serves as the state's information source for animals, plants, and plant communities with a focus on species and communities that are rare, threatened, and/or have declining trends and as a result are at risk or potentially at risk of extirpation in Montana. Montana Animal Species of Concern (MTSOC) are native Montana animals that are considered to be "at risk" due to declining population trends, threats to their habitats, and/or restricted distribution. The iPaC resource was used to identify which BCC are potentially present in the project area.

Migratory bird species of concern considered for this project include those that have been documented in the vicinity of the project area and for which the project area contains suitable habitat. A number of species on these lists would not be affected by the proposed activities because appropriate habitat is not present in proposed treatment locations; these species will not be considered further. Northern Goshawk have been previously addressed and are not included in this analysis. Migratory birds included in this analysis are listed below.

Forest Service Sensitive	Habitat Indicator Species	Birds of Conservation Concern
Black-backed Woodpecker	Baltimore Oriole	Black-billed cuckoo
Long billed Curlew	Yellow Warbler	Brown Creeper
	Oven Bird	Cassin's Finch
	Spotted Towhee	Chestnut-collared Longspur
	Brewer's Sparrow	Clark's Nutcracker
	Sharptail Grouse	Golden Eagle
	Merlin	Lark Bunting
		Loggerhead Shrike
		Long-eared Owl
		Pinyon Jay
		Sage Thrasher
		Veery

Existing Condition

The CGNF provides breeding habitat for dozens of migratory bird species. This extremely diverse group occupies all types of habitat in the vicinity of the project area including streams, wetlands, riparian areas, grass/forb meadows, shrub lands, deciduous forest, coniferous forest, mixed forest and rock outcrops. Within the project area, forested habitats provide trees, shrubs, snags, and surface vegetation for nesting birds. Riparian areas support a high diversity of migratory bird species. Forage is abundant in the project area with birds, small mammals, and insects providing prey for a number of species. Seeds, berries and other vegetative food sources are also abundant.

Snags (standing dead trees) are an important habitat component for migratory songbirds and are used for nesting, roosting, and foraging by a number of migratory bird species. Coarse woody debris (fallen snags and larger dead, down woody material) also provides foraging substrates, perches, and cover for migratory birds. The Threemile project area is currently utilized by a variety of migratory birds and provides for the variety of habitat needed to support these diverse species.

Affected Environment

Under the no action alternative, migratory bird nesting habitat would remain unchanged. There is potential for the project area to undergo a large scale fire which would increase tree mortality across the project area. This would benefit some migratory bird species while having detrimental effects on others. Increased tree mortality could attract snag-dependent migratory bird species. Standing dead trees provide nesting and foraging habitat for snag-dependent migratory bird species, and also provide perch trees for habitat generalists. Tree mortality would also promote growth of grass, forbs and shrubs, which would favor some migratory bird species that prefer to nest and forage near the ground. However, other species, such as those that require forest interior for breeding habitat, or those with more generalist

habitat associations, and that require large, live trees for nesting or foraging, would be negatively impacted by continued tree mortality. Without any fire events, bird species that prefer more mature, late-successional forested stands would increase, and species that rely on disturbance and more early-successional forest structure or open stands would be reduced.

- Under alternatives A and B, commercial harvest treatments of ponderosa pine would be in forested areas where many migratory bird species typically nest. The prescribed burn treatments and some commercial harvest, during the nesting season, may likely disturb some small migratory nesting birds and may cause some nest abandonment. However, these proposed actions are expected to maintain grassland and edge habitat by reducing tree densities in natural openings and along forest edges. Furthermore, treatments are designed to restore a forest structure similar to the historic condition. For example, individuals that prefer a more open forest structure as well as those that utilize a greater proportion of grass/forb/shrub species within a forested environment could benefit from proposed treatments, whereas those species attracted to dead/dying forest for the insect prey base and/or snag-dependent species may be negatively impacted by removal of dead and dying trees, as well as the longer-term reduction of insect mortality and reduced risk of high-intensity wildfire within treatment units.

Proposed treatments would directly reduce the availability of snags and coarse woody debris within the treatment units by removing dead and dying trees. The proposed action would indirectly affect the future availability of snags and coarse woody debris in treatment units and perhaps adjacent forest by retarding the spread of insect infestation and consequently reducing snag/coarse woody debris recruitment in the project area. Proposed treatments would also reduce fuel loading in treatment units, which would decrease the potential for stand-replacing fire, another indirect effect that could impact future snag and coarse woody debris availability.

Conclusion

For all treatments, the habitat of individual birds, breeding pairs, or family groups might be affected, but these effects (positive or negative) would be too minor (due to the size and distribution of affected areas) to have impacts to any species at the population level. Stands in the immediate vicinity of treatment units would provide habitat for species selecting for dense canopies. Treatment activities would promote a mosaic of structural stages and stand compositions in affected areas following treatment. Project design criteria would be implemented that would potentially reduce impacts by altering the season of the proposed activities (winter harvest versus summer implementation for a portion of the area), protecting known, long term breeding sites for key species (see below design criteria), and retaining dead standing wood for wildlife and other ecosystem functions.

- During the nesting seasons for prairie falcon (15 March – 20 July) and Merlin (15 March – 15 July) a ¼ mile buffer excluding timber harvesting activities will need to be maintained.
- Golden eagle nests will also require a ¼ mile buffer during the inactive nest period (15 February – 1 May). In the event that golden eagles begin actively nesting (adults defending the nest,

eggs, or young present) a ½ mile buffer will be necessary from that moment until 15 July, to be compliant with the Forest Plan (USDA 1986, p. 19).

- Known nest trees for eagles, falcons, and Merlins should not be harvested.
- Buffers for raptor species not specified in the Forest Plan will be determined by the wildlife biologist.

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Additional Figures

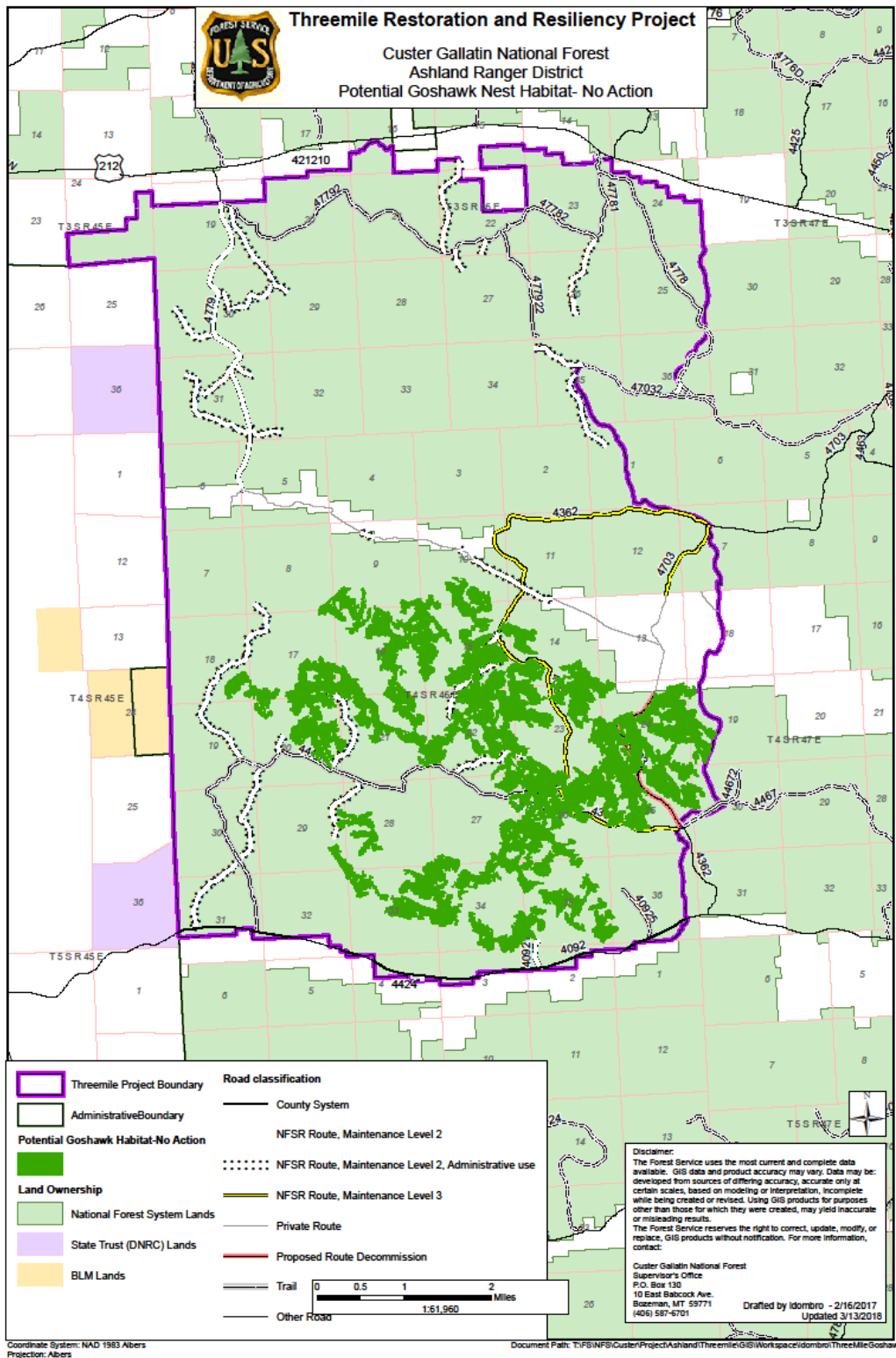


Figure 3 Current potential goshawk nesting habitat within the Threemile project area.

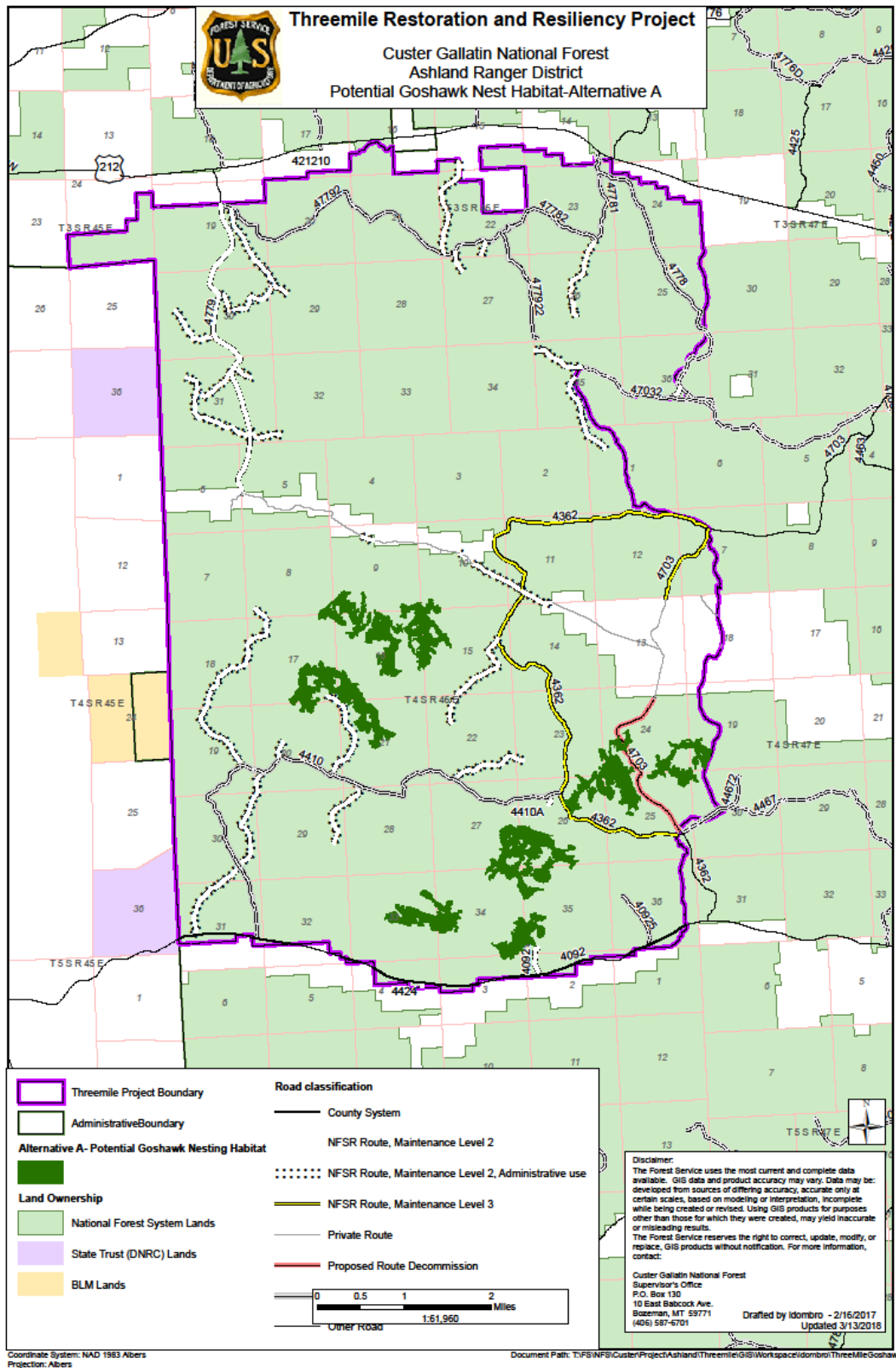


Figure 4. Potential goshawk nesting habitat within the Threemile project area after timber activities in Alternative A.

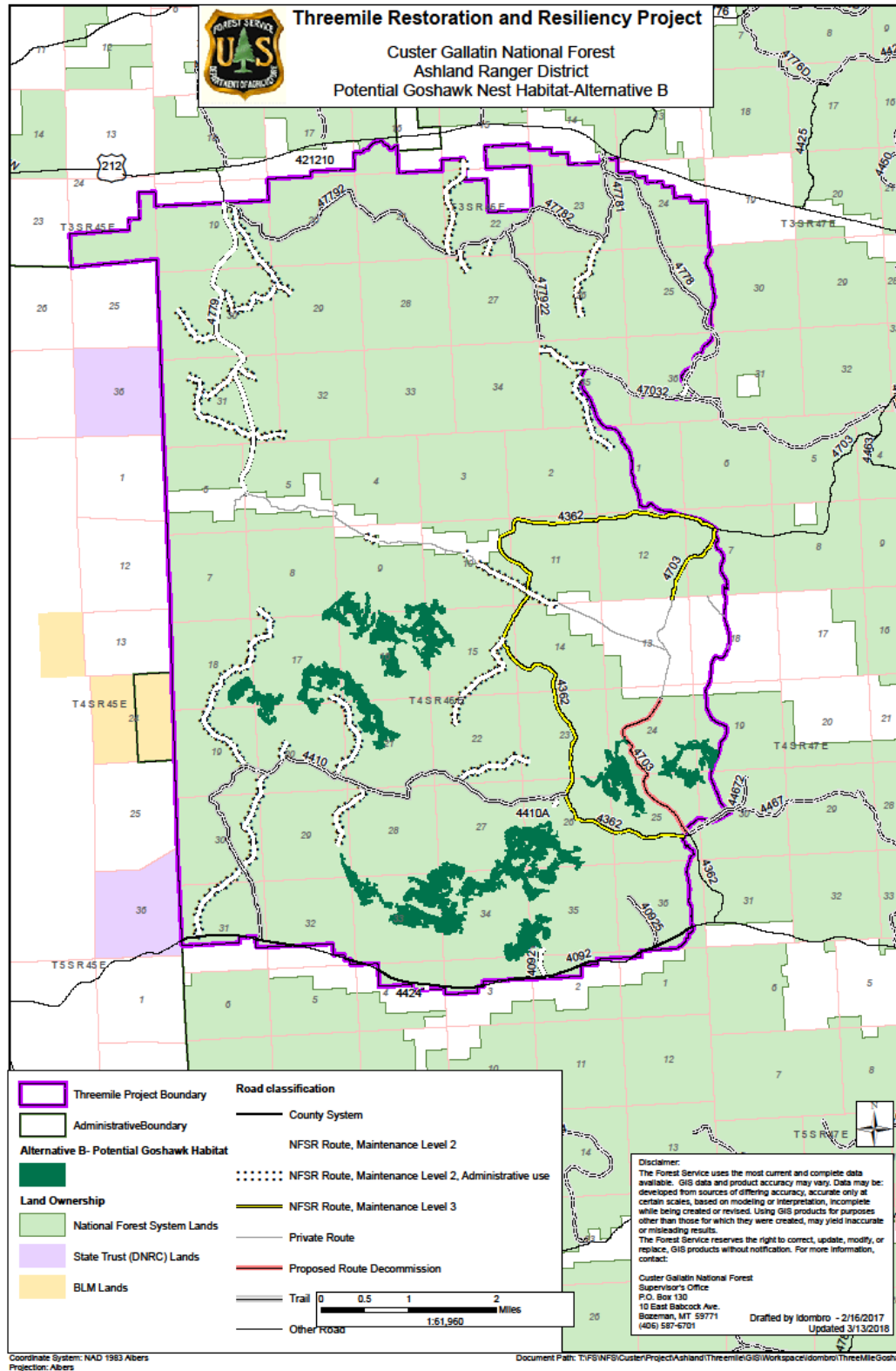


Figure 5. Potential goshawk nesting habitat in the Threemile project area left after project activities associated with Alternative B.

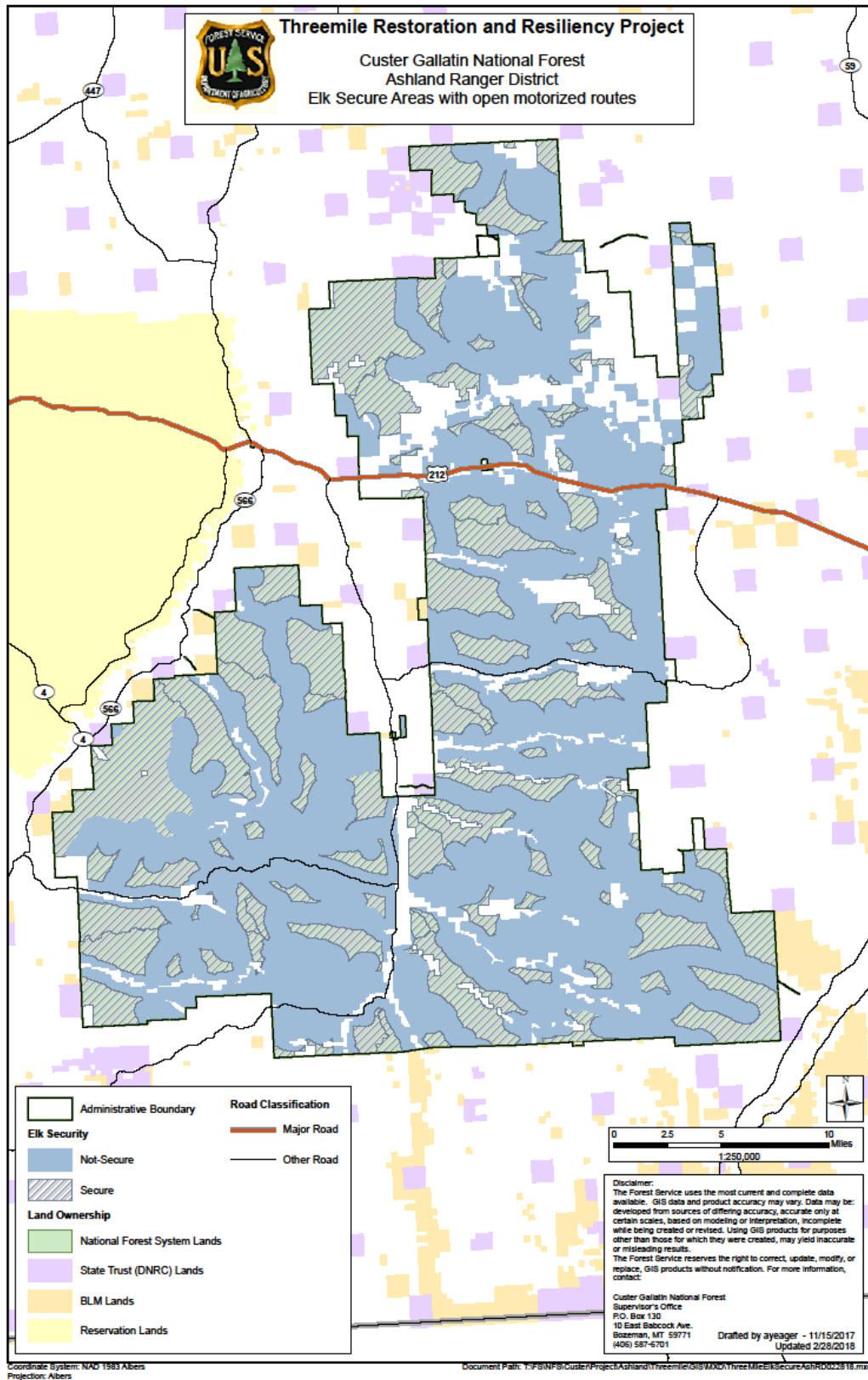


Figure 6. Areas of big game habitat that are secure and not-secure across the Ashland Ranger District.

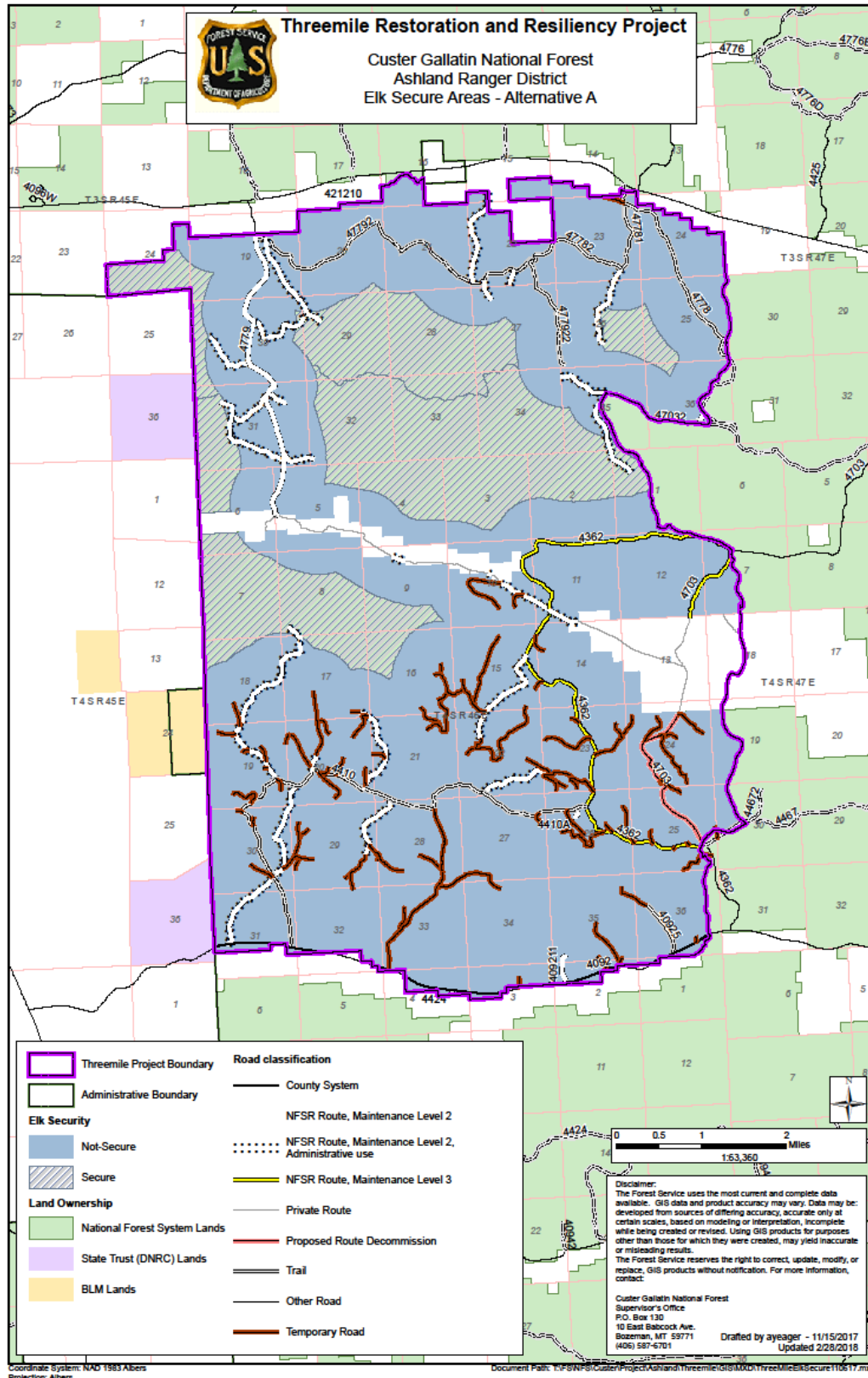


Figure 7. Security areas for big game in the Threemile project area during project work for Alternative A.

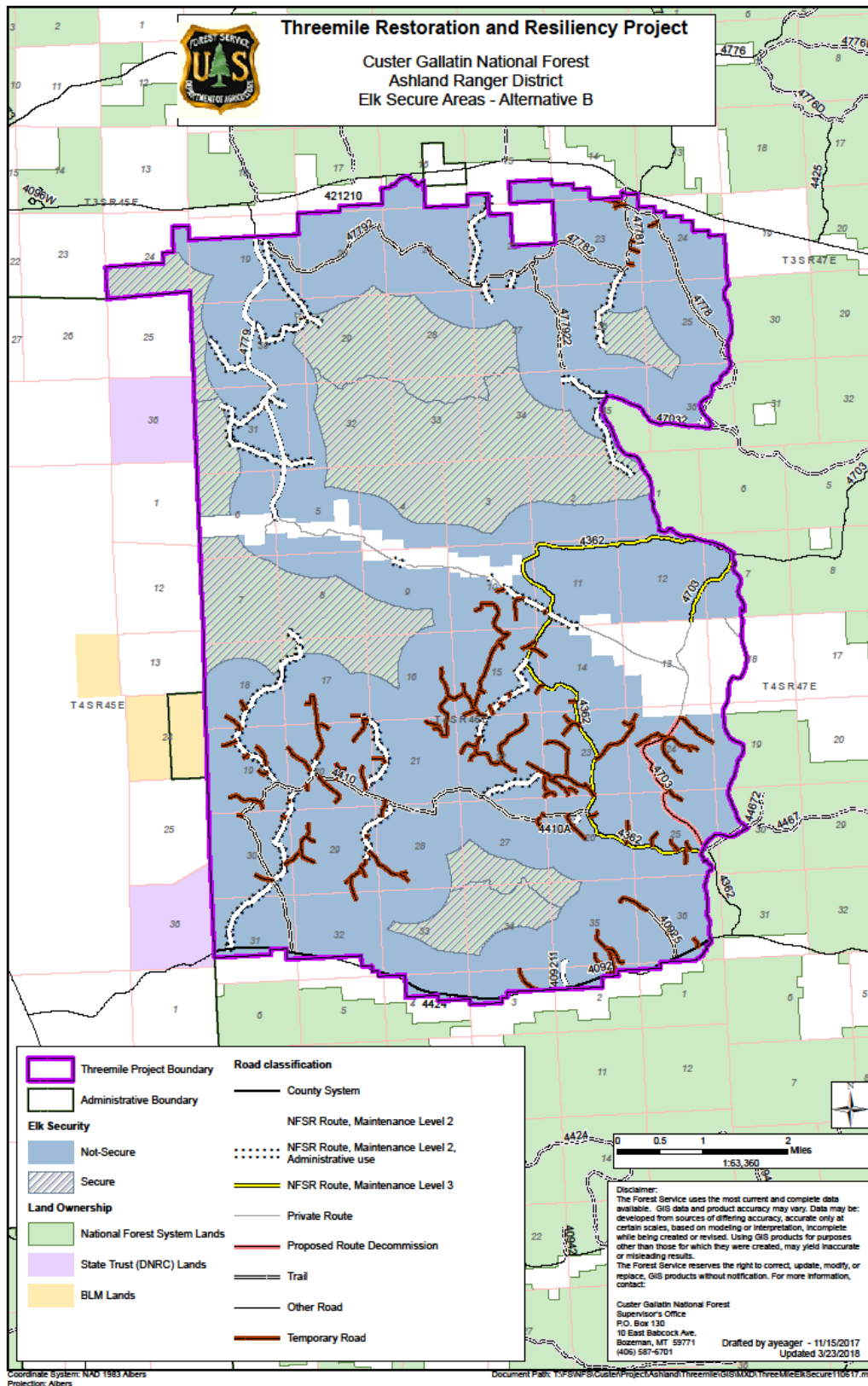


Figure 8. Security areas for big game in the Threemile project area during project work for Alternative B.

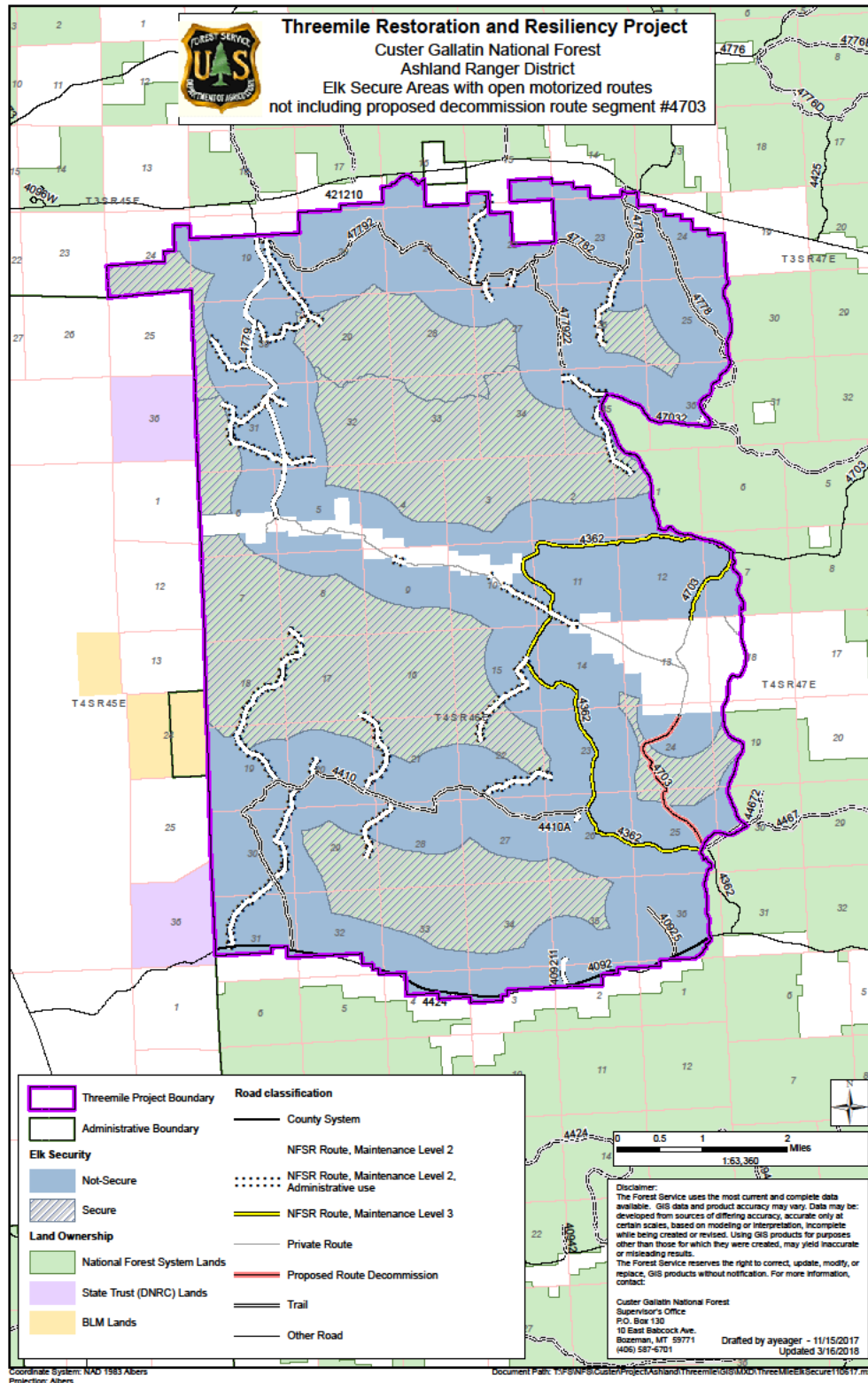


Figure 9. Increased security areas for big game in the Threemile Project area after project activities are completed and roads decommissioned.

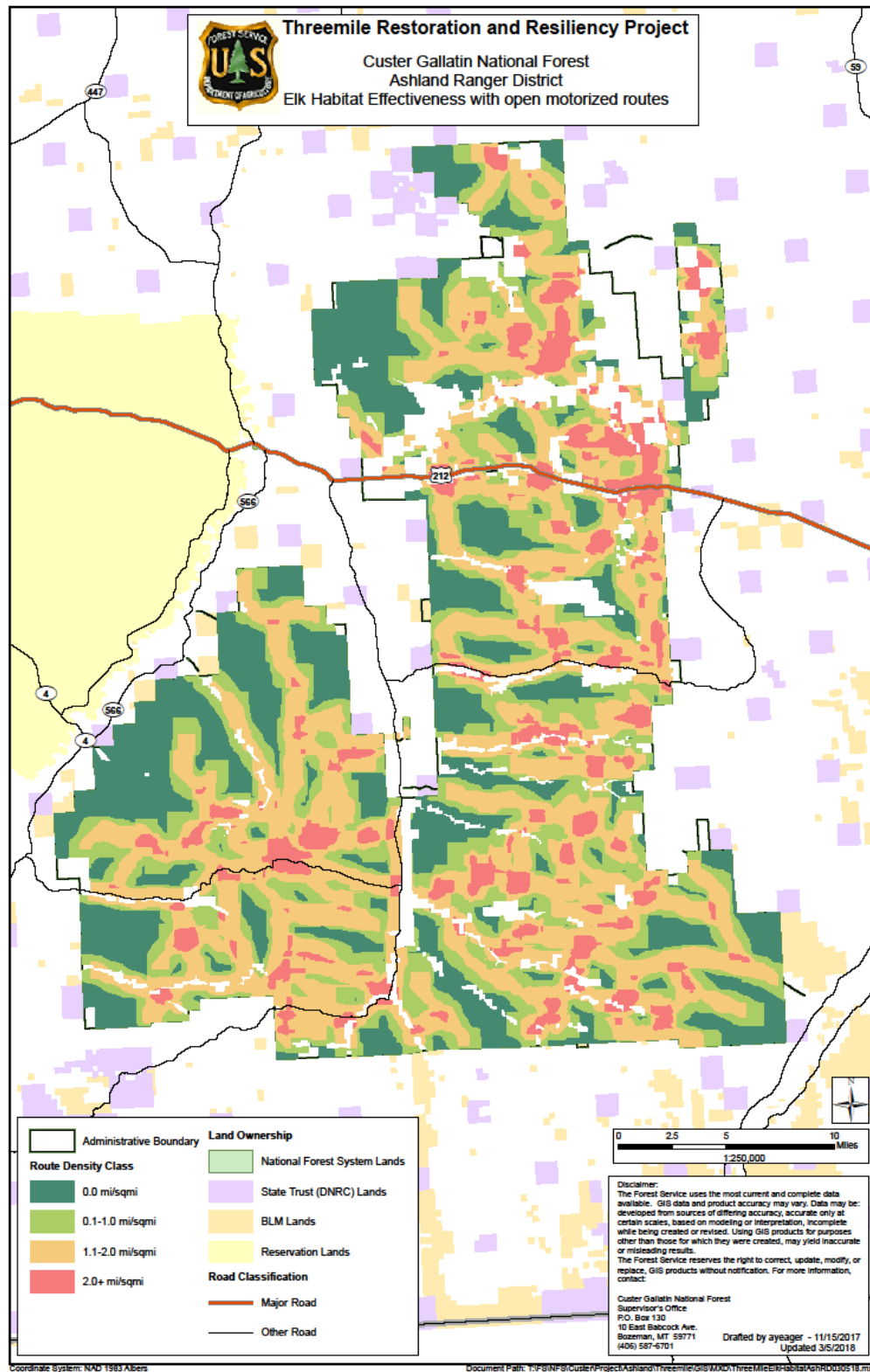


Figure 10. Current effective habitat for big game across the Ashland Ranger District based in road densities.

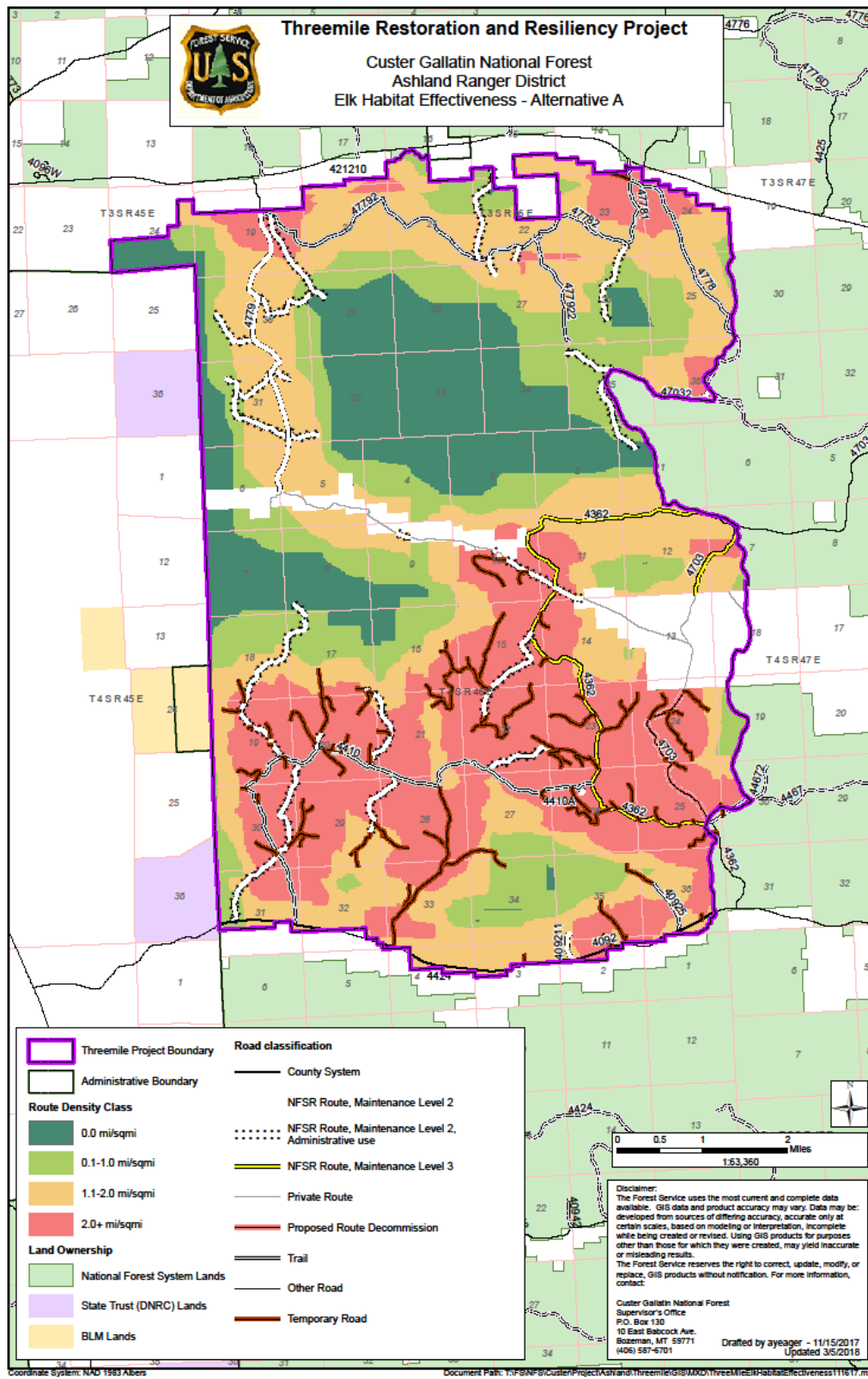


Figure 11. Habitat effectiveness for big game during project work in the Threemile project area for Alternative A.

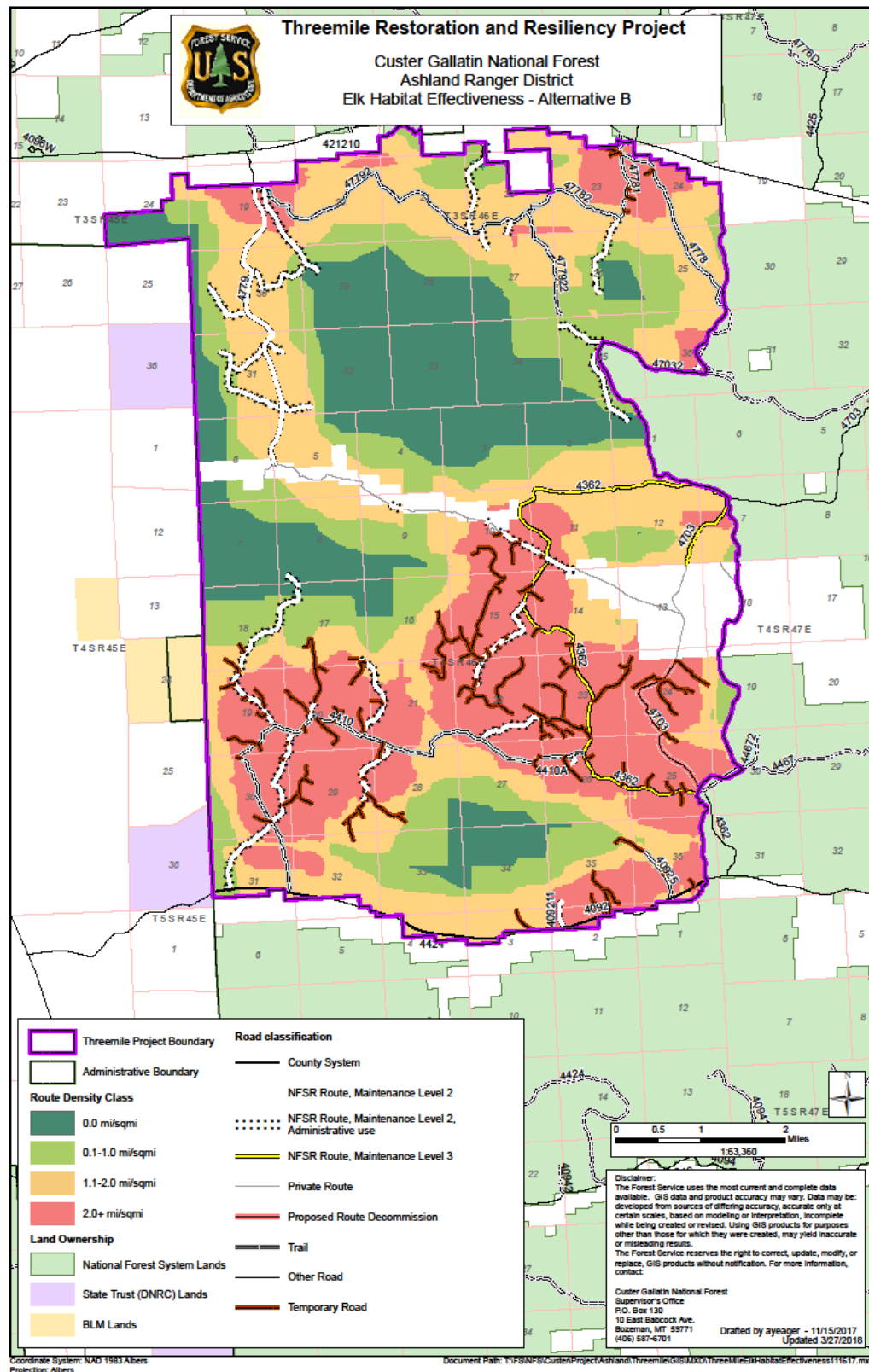


Figure 12. Habitat effectiveness for big game in the Threemile project area during project work for Alternative B.

